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Book .P6

Lessons in Anatomy

FOR

CHILDREN

OF

THE NEW CHURCH.

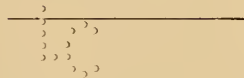


THE
Five Sensory Organs

Lessons for Children of the New Church

BY

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1821 Wallace Street, Philadelphia

C18953

BX 3781
P. 10

Gift
Published
7 Apr 15

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PREFACE.

This little treatise on the five sensory organs is a first attempt in gathering material for the instruction of children of the New Church in the science of Anatomy. No consistent plan has been followed in the presentation and arrangement of the material, but the cardinal principle has been steadily kept in view, to give as much instruction from writers on the physical organs as will interest the pupil, and by quotations from the Word and the Doctrines, to lead him to connect things material with things spiritual to which they correspond, and from which they have their existence, and thus to lead him to "the Greatest Man which is Heaven," and to the Lord.

Pictures and plates, and if possible, models, representing fully and clearly the objects under consideration, ought to be freely employed in connection with these lessons. With this end in view a number of illustrations have been borrowed from standard Anatomies, and inserted in the text, which will be welcomed especially by those who have no other means of supplementing the instruction.

The earlier parts of this book were printed and issued by a generous friend, but the later parts were printed in another city, and published by the Academy, which explains why paper, type and arrangement are not quite uniform throughout.

Philadelphia, October, 1895=125.



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THE EYE.



Ps. cxxxii. 4-5.—If I give sleep to mine eyes, to mine eye-lashes slumber, until I find a place for the Lord, habitations for the Strong one of Jacob.

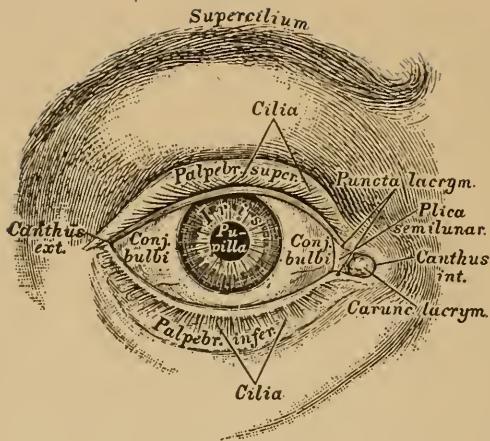
Ps. xxxii. 8.—I will make thee intelligent, and I will enlighten thee in the way which thou shalt go. I will counsel upon thee with mine eye.

Ps. xxxiv. 15.—The eyes of the Lord are upon the just, and His ears are upon their cry.

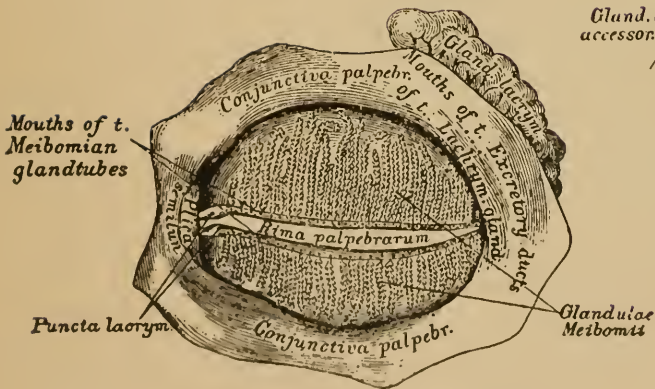
Ps. xxxiii. 18.—Behold, the eye of the Lord is upon them that fear Him; upon them that expect His mercy.

Ps. xciv. 9.—He that planteth the ear, shall He not hear? If He formeth the eye, shall He not behold?

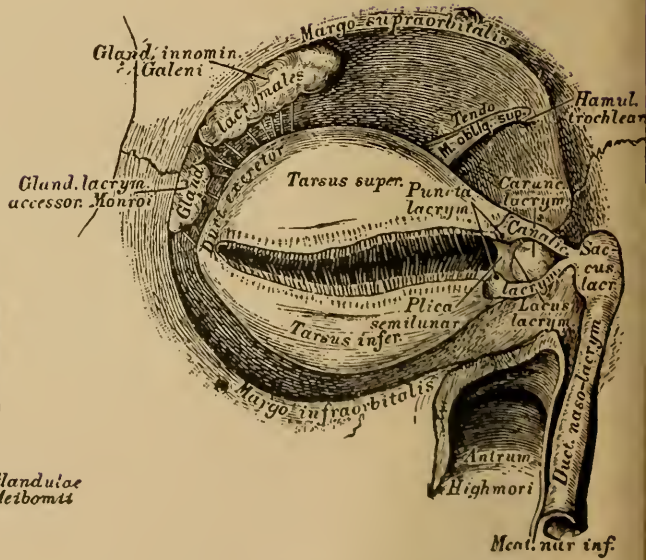




THE EYE.



THE INNER SURFACE OF THE EYELIDS.



THE LACHRYMAL APPARATUS.

THE EYE.

ITS PROTECTIONS.

“The eye, you know, is a very tender organ. It is therefore guarded thoroughly, and it is very seldom hurt. But notice that it is just where it would be likely to be hurt if it were not thus guarded. It is right out in the front part of the head. It must be there for the mind to use it in seeing. And it is much of the time open. You would suppose then, that it must very often be struck and hit by things that are thrown about; but it is really very seldom hit so as to hurt it much.

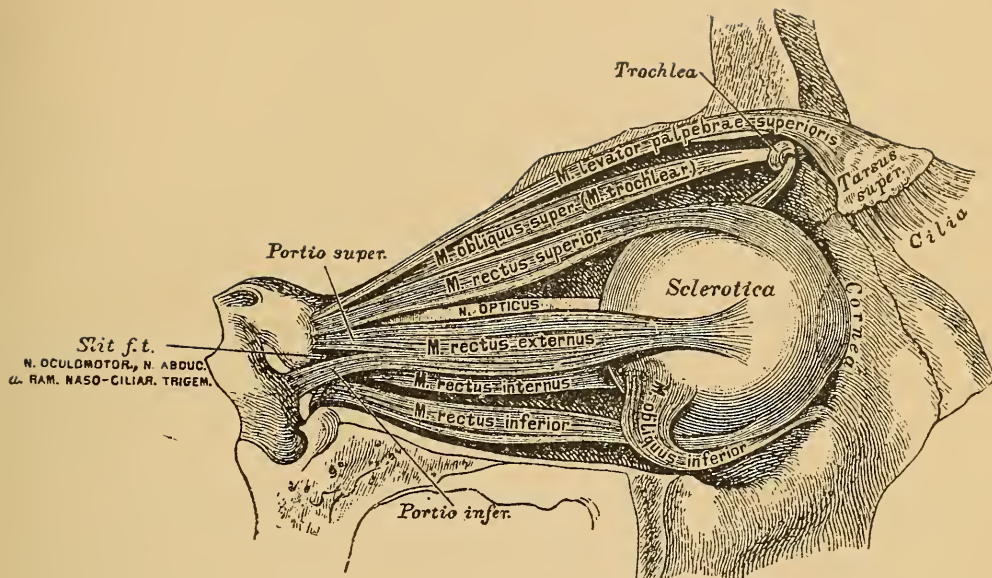
“The parts about the eye are often injured, but the eye itself generally escapes. We often see the eyelids and the cheek black and blue from a blow, and yet the tender and delicate eye is as sound as ever. People say in such cases that the eye is black and blue, but this is not so; the injury is all on the outside, and does not go into the eye.

“Now let us see in what way the eye is guarded. It is in a deep, bony socket. There is bone all around it except in front. Then, too, see how the bones stand out all around it. The bone of the forehead juts over it. Below and to the outside stands out the cheek-bone,

and the nose is its wall on the inside. Now you can see that a blow with a stick would be very likely to strike upon some of these walls of bone, and the eye would then escape. They are *réal* walls of defense to the eye. A stick cannot hit the eye itself unless it goes with its end pointed to the eye. It must go in this way to avoid striking on these walls or parapets of bone by which the eye is surrounded.

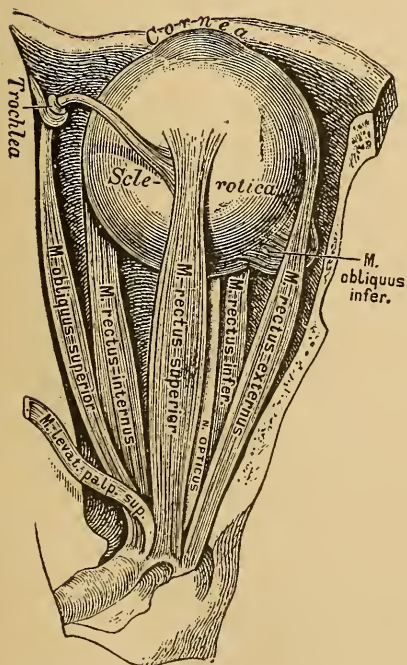
“But even if the stick gets past these bony walls, it may not hurt the eye after all. Perhaps you never thought what use there is in being able to wink so quickly. See what winking does. It shuts the eyelids over the eye, so that nothing can get into it unless it is something sharp enough to pierce the lids, and a blow will not hurt the eye, if the lids are closed, unless it is hard enough to bruise it through the lids. How quick is the working of that winking muscle! The moment that the eye sees anything coming toward it that may injure it, this muscle shuts the eye out of sight as quick as a flash. It hardly seems as if there was time for a message to go from the eye to the brain, and then another, back, from the brain to that muscle in the lids. But all this happens. The nerve of the eye tells the mind of the danger, and the mind sends a message to the winking muscle. This is done so quickly that whenever people speak of anything as being done very quickly, they are very apt to say that it was done in the twinkling of an eye.

“But I have not told you of all that this winking



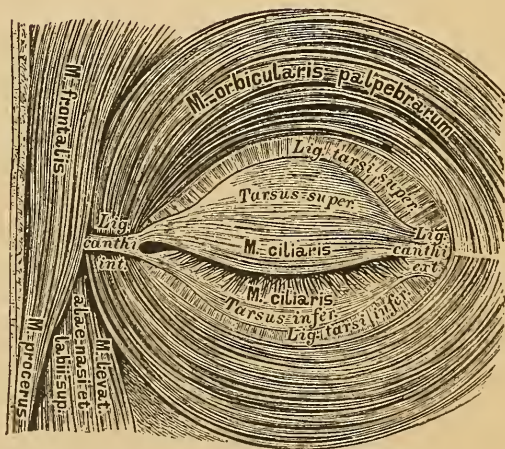
THE MUSCLES OF THE EYE.

From the Outside.



THE MUSCLES OF THE EYE.

From Above.



THE MUSCLES OF THE EYELID.

muscle does. It does something more than shut the eye in. It pushes it back in its socket, so that it is a little further out of the way of a blow. And it does not push it right against the hard bone of the socket ; there is a soft cushion of fat for it to press the eye against. And this is not all. When the eye sees a blow coming, this muscle acts so strongly that it wrinkles the skin of the eyelids and pulls down the eyebrow and draws up the cheek.

“Now see how this guards the eye. The cheek and the eyebrow are brought so near together that there is but little room for the blow to get at the eye ; and even if it does, the wrinkled skin of the lids makes a cushion over it that breaks the force of the blow. You can see that the blow would be much more apt to do harm if the winking muscle merely brought the lids together. As it is, a blow commonly hits on the eyebrow or cheek, or both, while the eye is safe shut up and pushed back in its cavern upon its cushions of fat. To see how much the bringing together of the cheek and eyebrow defends the eye, you must look at some one as he forcibly closes it. And if, at the same time, you put your finger on the parts, you will see how the cushions which all this wrinkling makes over the eye and about its socket defend it from harm.

“So you see that not only is the eye guarded by parapets of bone, but the busy winking muscle raises up cushions on them whenever the eye sees a blow coming. These cushions often save the bone from

being cracked, and in this way also keep the eye from being hurt.

“Of what use do you think the hairs on the eyebrow are? They are for good looks you will say. But they are for something more than this; they are a defense to the eye. How this is, I will explain to you. You know what the eaves of a house are for when there is no trough to the roof. They keep the rain from running down from the roof to the sides of the house. They make it drop off to the ground a little way from the house. Just so the hairy eyebrows make the sweat of the forehead drop off on to the cheek, instead of running down into the eye. The eyebrows, then, are the eaves of the roof of the eye's house.

“Perhaps you will ask what hurt the sweat would do if it should run down into the eye? It would be very disagreeable; and besides this, it would irritate the eye, and make it red. The eye would become inflamed.

“The eyelashes, too, besides making the eye look well, are a defense to it. You know that there are often small things flying about in the air which we are not apt to see. If these fly against the eye, they generally hit against the lashes, and so are prevented from going into the eye.

“The tears also are a defense to the eye. If anything happens to get past the eyelashes into the eye, how quick the tears flow to wash it out! Commonly the gland, or tear-factory, only makes tears enough to keep the eye a little moist; but as soon as anything gets into

the eye and irritates it, the tear-factory sets to work briskly and sends down the tears abundantly. At the same time the winking muscle keeps moving the lids, and generally what is in the eye is soon washed out.

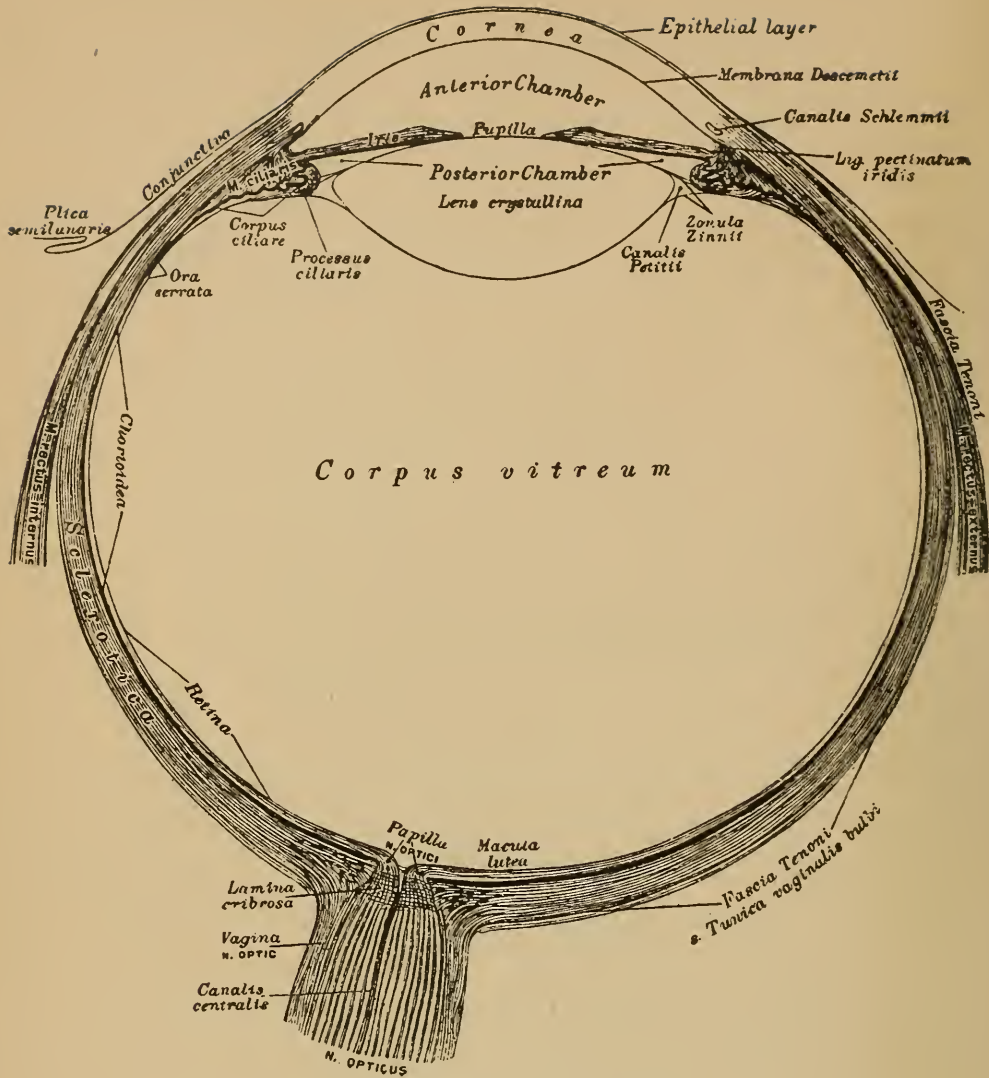
“Tears are flowing into the eye all the time. If they did not, the eyeball and the inside of the lids would become dry, and they would not move easily upon each other. You would have to keep wetting them with water to keep them from rubbing. The tear-factory, which is just above the eye, continually sends down, through some little tubes or ducts, just enough tears to make the motion of the eye and the lids easy.

“But you ask where do the tears that are made go? They do not commonly run out over the lids, and they must go somewhere. I will tell you about this. If you look at the eyelids of any one, you can see in each lid a little hole at the end of the edge toward the nose. The tears go into these holes and down through a duct that ends in the nose. This duct may be called the sink drain of the eye, for the tears, after washing the eye, run off through it. These two little holes or mouths in the lids commonly take in all the tears as fast as they come to them; but when we cry, the tear-factory makes tears so fast that these mouths cannot take them all in. The tears therefore overflow their banks—the lids—and run down on the cheeks.”—*From Hooker's Chila's Book of Nature.*

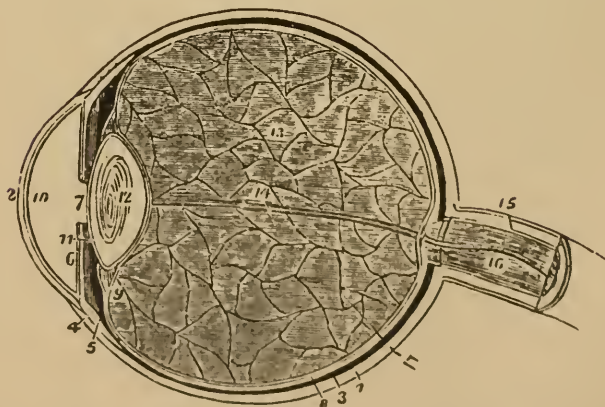
SUMMARY OF PROTECTIONS TO THE EYE.

- 1st.—Projecting bones of the orbit.
- 2d.—Muscles around the eye.
- 3d.—Eyebrows.
- 4th.—Eyelids.
- 5th.—Eyelashes.
- 6th.—Cushions of fat around the ball.
- 7th.—Moisture.

In this borrowed account of the protections of the eye we are carefully taught how precious the eye is, but nowhere does it give us a hint of why it is so precious. Any child set to answer this question, would probably say "Why, to help us to see." Yes, but why is it important that we should see? Some older child, trained to think a little, may have thought about this truth that it is much easier to understand a thing by means of the eyes, than if described orally, or examined by the touch, and so may say: "Why, to help us understand things." True, but let us go a step further and inquire why do we need to understand things? Few children will be ready with the answer to this question, but any child in the New Church, old enough to study these lessons, is old enough to understand the answer. It is because we are born into this natural world purposely to have our spiritual senses developed and educated for heaven.



SECTION OF THE EYEBALL.



SECTION OF THE GLOBE OF THE EYE, SHOWING PROCESSES OF HYALOID MEMBRANE.

1. Sclerotic. 2. Cornea. 3. Choroid connected anteriorly with (4) Ciliary ligament, and (5) Ciliary processes. 6. Iris. 7. Pupil. 8. Retina. 9. Canal of Petit. 10. Anterior chamber containing aqueous humor. 11. Posterior chamber. 12. Crystalline lens. 13. Vitreous humor. 14. Neurillemma of the optic nerve. 16. Central artery of retina. 17. Processes of Hyaloid Membrane.

Each one of our natural senses has a particular service to perform in this work. Our eyes have for their part to aid the understanding in seeing what is true, for that is the only way to learn to love what is good.

PS. XIX. 9.—The commandments of the Lord are right, rejoicing the heart. The precept of the Lord is pure, enlightening the eyes.

PS. CXLV. 15.—The eyes of all await Thee, and Thou givest them their food in its time.

ISA. XXXV. 5.—Then the eyes of the blind shall be opened and the ears of the deaf shall be opened.

ISA. LII. 10.—The Lord hath made bare the arm of His holiness in the eyes of all the nations, and all the ends of the earth have seen the salvation of our God.

MATT. IX. 27-31.—And when Jesus departed thence two blind men followed Him, crying and saying: Son of David have mercy on us. And when He was come into the house the blind men came to him; and Jesus said unto them: Believe ye that I am able to do this? They said unto him: Yea, Lord.

Then touched He their eyes, saying: According to your faith be it unto you. And their eyes were opened and Jesus

strictly charged them, saying: See no man know it.

But they, when they departed, published Him in all that country.

THE EYE—ITS MUSCLES.

In looking at the eye of the manikin (or at a picture of the eye) we notice first, on the outside of the ball, some red flat bands.

They are the muscles that move the eye. Four of them are attached at about equal distances around the ball, one at the top of it, another at the bottom, one at the inner side next to the nose, and one at the outer side next to the temple; the last two are about half-way between the upper and the lower ones. You can see that they come nearer to each other as they approach the back part of the socket. There they come close together and are fastened around what looks like a round white cord, but which really is the nerve of sight coming down to the eye from the brain where all the nerves begin.

These bands or muscles have been given Latin names from their position and from their direction. Thus one is called the Superior rectus muscle because it is attached to the superior or upper part of the eyeball and is a straight muscle; rectus is a Latin word meaning straight. Then the lowest one is called the Inferior rectus because

it is fastened on the under side of the ball, and it is also straight. The one nearest the nose is called the Internal rectus, and the one on the opposite side of the eye from this is called the External rectus.

When we speak of them altogether, we call them the recti muscles.

Besides these four, there are two others fastened to the ball of the eye, quite near those already described. But these do not go directly from the eye back to the furthest part of the socket, as do the straight ones. They have a slanting or oblique direction, and are therefore called the oblique muscles. The one attached to the upper side is called the Superior oblique, and the other attached underneath, is called the Inferior oblique. The Superior oblique slants toward the inner corner of the eye, where it becomes round and small, so as to pass through a little loop of cartilage, something like half a ring fixed in a wall. After passing through the loop or pulley it spreads out flat again and goes toward the back part of the socket with the others. The Inferior oblique is fastened to the under side of the eyeball close to the Inferior rectus; it slants to the outer corner of the orbit, where it is attached.

This makes six muscles that are attached to the ball of the eye. Their use is to draw and turn and pull the eye in every direction necessary to enable us to see any object.

They do not all draw up or contract at the same time. One will have to relax and stretch out, while

another on the opposite side of the eye is drawing up or contracting. Each muscular band is made up of a great many threads or fibres lying side by side. Each little thread of a muscle has a tiny thread of a nerve attached to it.

These nerves, as you have learned, come down from the brain, and it is through these little tubes that the messages are sent back and forth from the brain to the eye, and thence back to the brain, where the soul has its court from which it controls all the body. Of all the muscles of the body, those of the eye are the quickest to obey the soul's command.

If we wish to look to the right or to the left, above or below, a message speeds down the nerve like lightning, and is received and obeyed in the same instant.

This promptness reminds us of those angels who love the Lord so intensely that they find the deepest delight of their lives in learning and obeying His will. With them the learning it and the doing it make one thing.

There is another muscle not attached to the eye, although it comes forward from the same point where the others are attached in the back part of the socket.

It passes over the ball of the eye, enters the upper eyelid, spreads out as a wide flat band, and ends at the very front edge where the lashes are. Its use is to draw the eyelid up. It has a long name, containing three words—the Levator Palpebræ Superioris. The first word indicates its use of elevating or lifting; the

second is the Latin name for the eyelid, and the third word indicates that it is the superior or upper eyelid.

There is one more muscle that you will be interested to learn about. It passes entirely around the orbit of the eye, and spreads itself out quite thin on the upper and lower lids. It can draw the lids together, so its use is just the opposite of the last one. It is the winking muscle mentioned in the first chapter. It also has a very long name—the *Orbicularis Palpebrarum*—which the older children may like to learn.

The following extracts are from the Heavenly Doctrines of the Lord's New Church, and contain teachings about the eye.

A. C. 3676.—The eye is merely an organ of the body by which the internal man sees those things which are out of the body, or which are in the world.

H. & H. 333.—In the Grand Man, which is heaven, all infants are in the [province of the eyes. From the circumstance that in the Grand Man, or heaven, infants are in the province of the eyes, it is also evident that they are under the immediate view and auspices of the Lord.

A. C. 4407.—The eye is the most noble organ of the face, and communicates more immediately with the understanding than the rest of man's organs of sense.

As the sight of the eye corresponds to the understanding, therefore also sight is attributed to the understanding, and is called intellectual sight; those things also which man perceives are called the objects of that sight, and also in common discourse it is usual to say that objects are seen when they are understood.

MATT. XX. 30-34.—And behold two blind men sitting by the wayside, when they heard that Jesus passed by, cried out, saying: Have mercy on us, O Lord, Son of David.

31.—And the multitude rebuked them because they should hold their peace; but they cried the more, saying, Have mercy on us, O Lord, Son of David.

32.—And Jesus stood still and called them; and said: What will ye that I shall do unto you?

33.—They say unto Him, Lord, that our eyes may be opened.

34.—So Jesus had compassion and touched their eyes; and immediately their eyes received sight, and they followed Him.

THE EYE—ITS COATS.

If we were to cut down a little way into the ball of the eye, and then cut all around it, we would be able to peel off an outside layer, something as one would peel off the outside layer of an onion. This peeled-off layer is the first layer or coat of the eye, and its name is the sclerotic, which is from a Greek word, meaning *hard*. Of course, this means that the sclerotic is of a harder and firmer texture than the two soft coats that lie under it, and which are protected by it. You can see the color and form of this coat by looking into any one's eye. It is usually of a pearly-white color outside, but inside, next to the second coat, it is brown. This inner side has little narrow depressions called grooves for nerves to lie in.

But let us go back to the outside of the sclerotic coat. Just in front it has a round opening that is filled by a beautiful transparent membrane, called the cornea, that is as clear as the purest crystal. And there is something very curious about it. Just look into each others' eyes and see what a delicate thin-looking membrane it is. And yet it is about as thick as the sclerotic coat, and is made of a great many layers lying together so closely as to look like *one* layer.

The cornea curves more than the sclerotic. In the picture of it you can see that it looks like part of a little

ball stuck upon the larger ball of the sclerotic coat. This latter coat has also an opening behind, but different from the one in front. It is much smaller and admits the nerve of sight, the optic nerve, into the eye.

When you look at the sclerotic coat, you can see that it has a very smooth, glassy look. This is owing to a thin, shining membrane, called the conjunctiva that covers all over the cornea and sclerotic coat and then extends up over the under side of the eyelids to their very edges.

Just under the sclerotic is the second coat, the choroid. The choroid coat is of a chocolate brown color and has two layers. The outside layer is made of larger vessels than the inside one, and so looks coarser. The inner one is a web of extremely fine, delicate blood-vessels, especially fine at the very back part of the coat.

Right in the centre of the front part of the choroid coat is the pupil; this is from a word meaning a babe, because it is right in the pupil that you see the tiny image of any person, an image small enough to be a *very* little babe.

The pupil, as you see it in any eye, appears to be a black spot, but it is in reality a round hole right through the choroid coat. All around this hole is the colored part of the eye that is of such different colors in different eyes. For this reason it is called the iris, which means a rainbow.

The iris has a great many threads or fibres in it

that run round and round the pupil. Like the fibres of other muscles they have the power of contracting or drawing up, and of relaxing or stretching out. We have control over some of these muscles about the eye; for instance, we can make the Recti muscles, and the Levator Palpebræ Superioris contract or relax at our pleasure. But we have no control over these fibres of the iris that run around the pupil. They will draw up and make the pupil smaller when we look at the sunshine, in order to keep a part of it out of the eye, as too much light might injure it, and they will relax and make the pupil larger when we are in the dark.

The optic nerve, the nerve of sight, coming down from the brain, pierces the choroid coat behind, as you can see by looking at the eye of the manikin, or at a picture of it.

The inside coat of the eye is called the retina, from the Latin word *rete*, which means an interlacement or weaving of fibres. It is made of the nerve of sight, the optic nerve that pierces the sclerotic and choroid coats and then swells out into a beautiful almost transparent ball. You can look into the retina of the manikin's eye, and see a pretty little round empty room with some very fine red lines representing arteries on its walls. But the retina of the human eye is never empty during life. Transparent and delicate as it seems, the coat of the retina is made up of several layers. But of them you can learn better when you are older.

It is on the back part of the retina, inside, that the

image of any object that we see is thrown. No matter how big the object may be—even a large extent of the surface of the earth—a tiny image of it can lie in the tiny space in the back part of the retina. And it is the impression of this that flashes like lightning through the optic nerve up to the brain where it is presented to the mind.

You have often been taught that all heaven is in the form of a Grand Man. In this Grand Man there are societies of angels whose business it is to receive new-comers from the different earths just as our lips receive food. Then there are some that receive these new-comers and judge of their character and quality just as our tongues judge of the character and quality of our food. There are other societies of angels that perform other uses like the uses of the different organs and members of the human body. There are societies of angels that perform the same use in the Grand Man that our eyes perform for our bodies. And what is wonderful, the performance of these different uses by the angels unites them to us so that they can take care of and protect the different parts of our spiritual bodies, and through them they can take care of and protect our natural bodies. Without this care and protection, we could not take a single step, or breathe a single breath.

It *seems* as if it were the angels who do this work, but it really is the Lord who does it through them, flowing down with His love and wisdom into all the angels

of all the heavens, and thence through good spirits into the souls of men, keeping them in life every moment, and giving them the love of working and the power to work.

It is like the ladder that Jacob saw in his dream: "Set upon the earth, and the top of it reached to heaven, and behold, the angels of God ascending and descending on it.

"And behold, the LORD stood above it."

It is not possible for us, while we live in this world, to get a full idea of how intensely the angels love to be sent to take care of us.

The Lord only knows it, and sends just the right angels to each person on earth to watch over him, and do their utmost to help him prepare for heaven, where they are so happy. If the angels' love for human beings be so great, what must be the love of the Lord?

The Heavenly Doctrines have a good deal to say about the angels who perform the use of the eyes in the Grand Man, and you will be glad to read about the Heavens in which they dwell.

First in the *Arcana Cœlestia* No. 4403, we read that "They who are at the eyes are such as are intelligent and wise."

Then in *Arcana Cœlestia* No. 4628, is a description of one of their heavens.

A. C. 4628.—The eye, or rather its sight, corresponds especially to those societies in the other life which are in paradisiacal scenery; they ap-

pear above, in front, a little to the right where there are presented gardens in living view with trees and flowers of so many genera and species that those which grow throughout the whole earth bear but a small proportion of them in number.

In each single object contained in those paradises there is something of intelligence and wisdom which beams forth; so that you would say that the inhabitants dwell together in paradises of intelligence and wisdom; these principles are what affect the inhabitants from the interiors, and thereby not only gladden the sight, but the understanding also at the same time.

This paradisiacal scenery is in the first Heaven, in the very entrance to the interiors of that Heaven.

This Heaven is distinguished into several Heavens, to which all the things in the cameras of the eye correspond; there is a Heaven, in which are atmospheres of different colors, where the universal aura glitters, as if it consisted of gold, silver, pearls, precious stones, flowers in their least forms and of innumerable things besides; there is a rainbow Heaven where the most beautiful rainbows, great and small, are variegated with most splendid colors.

A. C. 1623.—As to what respects the rainbow splendors, it is to be observed, that there is, as it were, a rainbow Heaven, where the whole atmosphere consists of very small continued rainbows. In this Heaven are all they who appertain to the province of the interior eye.

The whole atmosphere or aura therein consists of such splendors.

Around is the form of a very large rainbow, encompassing the whole Heaven, most beautiful to behold, being composed of similar smaller rainbows which are images of the larger.

The varieties and variations of the rainbow are indefinite. It has been given me to see some of them, and in order that some idea may be formed of the nature of their variety * * * * it may be expedient to describe just one or two.

There appeared to me the form of a larger rainbow that thence I might know of what nature and quality they are in their least forms. The light was most perfectly white, encompassed with a sort of circumference, in the centre of which was an obscure, and as it were earthy point, around which was spread a most refulgent brightness which was variegated and discriminated by another brightness with yellowish points like little stars; besides these were other variegations occasioned by flowers of divers colors which entered into the first most lucid appearance, and these colors flowed, not from a

white, but from a flame-colored brightness, and was all representative of things celestial and spiritual.

A. C. 4412.—There was a certain person with whom I was acquainted in the life of the body, but not as to the mind and interior affections; he occasionally discoursed with me in the other life, but for a little while at a distance. In general, he manifested himself by pleasant representations, for he could present things which delighted, such as colors of every kind and beautiful colored forms; he could also introduce infants beautifully decorated as angels, and several like things which were pleasant and delightful; he acted by a soft and gentle influx into the tunic of the left eye; by such things he insinuated himself into the affections of others for the end of pleasing and delighting their life.

It was told me by the angels that such are they who belong to the coats of the eye, and that they communicate with the paradisiacal heavens, where truth and good are represented in a substantial form.

H. & H. 450.—The celestial angels who attend upon a resuscitated person, do not leave him, because they love every one. But if the spirit be of such a character that he can no longer continue in the company of celestial angels, he desires to depart from them.

When this occurs, angels from the Lord's spiritual kingdom come to him and give him the use of light, for before he saw nothing but only thought.

I was also shown how this was done. Those angels seemed, as it were, to roll off the coat of the left eye toward the septum of the nose, that the eye might be opened, and sight be given.

* * * * *

When the coat of the eye seems to have been rolled off, something lucid, but indistinct appears, like what is seen through the eyelids on first awaking from sleep. This obscure light seemed to me of a sky-blue color, but I was afterward told that the color varies with different persons.

MARK VIII. 22-25—And he cometh to Bethsaida; and they bring a blind man unto Him and beseech Him to touch him.

And He took the blind man by the hand, and led him out of the town, and when He had spit on his eyes, and put His hands upon him, he asked him if he saw aught.

And he looked up, and said, I see men as trees, walking.

After that, He put hands again upon his eyes, and made him look up, and he was restored, and saw every man clearly.

HUMORS OF THE EYE.

The three coats of the eye, the sclerotic, the choroid, and the retina do not lie closely attached to each other in front.

You can see by the pictures of them that they are separated by tiny little spaces. These spaces are filled with fluids, or humors as they are called, of different kinds.

The first humor, in the space between the cornea and the choroid coat, is called the aqueous humor, from the Latin word "aqua," which means water.

This watery fluid or humor lies between the first and second coats in the front part of the eye. The aqueous humor fills this narrow front chamber full, and then flows through the pupil into another narrower space behind the choroid coat called the back chamber of the eye. The back wall of this back chamber is made by another humor, so clear and transparent that it is called the crystalline humor or crystalline lens. It is called a lens because its shape has some resemblance to the shape of a lens.

The crystalline humor or lens is a very interesting part of the eye. It lies in a rounded depression in the front part of the vitreous humor that looks like a little nest. It is inclosed in a beautiful delicate sac that is as clear and transparent as itself and exactly fits it. This sac is called the capsule.

In order to examine it well, the crystalline humor must be taken out of its capsule, then you can see that it consists of layer within layer, something like those of an onion.

These layers are not all of the same degree of softness. The outside one is the softest ; it is almost liquid ; the next one is a little harder, something like jelly, and the very centre is harder still, about as hard as a little round ball of gum arabic. But all the layers, as mentioned before, are of a pure crystalline transparency, so that the light, coming in through the cornea and the aqueous humor may pass through this lens also, on its way to the back part of the retina. For it is by means of the rays of light that enter the eye and pass through it that the image of any object is thrown there.

The third and last humor of the eye fills the ball of the retina. It is not so watery as the aqueous humor and not so hard as the centre of the crystalline humor. It is more like jelly—a thin colorless jelly. It has a glistening, glassy look, and is therefore called vitreous, which means glassy.

It has also its own covering, but this is not called a capsule ; it is called the hyaloid membrane. It surrounds the vitreous humor behind inside of the retina, but in front it comes forward to the rim or circumference of the crystalline lens that lies right in front of the retina and surrounds the rim and holds the lens in its place just like a brooch in its setting, only this setting is a beautiful band or crown of radiated or rayed-out fibres.

As we have now learned a little of the names and forms of the parts through which the light passes in going to the retina, let us follow the rays from the beginning to the end.

First, they pass through the conjunctiva, and the many plates of the cornea into the aqueous humor that fills the front and back chambers of the eye; then through the different parts of the crystalline lens into the front part of the retina, and through the vitreous humor and its covering, the hyaloid membrane, to the back part of the retina, where they stop. There, by some wonderful process the light paints an image of the object that we see; and, as before stated, an accurate impression of this image flashes up to the brain where the mind takes note of it.

There is much more to be learned about the eye. In fact, these lessons are only the beginning of knowledge concerning it. But having made this beginning, you can, in some future time, go on with delight to learn a great deal more. Especially if you now learn carefully what the Heavenly Doctrines teach about it, namely, that the eye is only the *means* of sight, it does not see. It is the understanding that sees, for the Doctrines teach that the understanding is the eye of the soul. (A. C. 3670.) It is interesting to know that the eye, whenever mentioned in the Word, means the understanding. We can easily comprehend this, for when a person understands a subject clearly, he says: "I see it." And constantly this eye of the soul uses the eye of

the body to see objects in this world ; and every natural object rightly looked at enables the understanding to see and know more clearly the things of the spiritual world. The more clearly we see spiritual things or truths, the more intelligently we can obey them, until seeing and obeying become one in our lives.

And when we have seen enough of earthly objects ; having made all the use of seeing in this world that is necessary for us—then the spirit—the real, living, seeing, body will be separated and withdrawn by the Lord from the earthly body, which, with all its organs, will at once begin to lose the human form, and decay and crumble into dust if left unmolested long enough.

But *we* shall awake to conscious life in the other world, where “ Eye hath not seen nor ear heard, neither have entered into the heart of man the things which God hath prepared for them that love Him.”

A. C. 1970.—By genuine visions are meant visions or sights of those objects which really exist in the other life, and which are nothing but real things which may be seen by the eyes of the spirit, but not by the eyes of the body, and which appear to man when his interior sight is opened by the Lord.

This interior sight is that of the spirit, into which also he comes, when being separated from the body he passes into the other life ; for a man is a spirit clothed with a body. Such were the visions of the prophets.

When this sight is opened, then the things which exist among spirits are seen in a clearer light than that of the mid-day sun of this world.

A. C. 1972.—As to what concerns the visions, or rather sights which appear before the eyes of the spirit, they are more and more interior. Those which I have seen in the world of spirits I saw in a clear light ; but more obscurely the things which exist in the Heaven of angelic spirits, and still more obscurely those which exist in the Heaven of angels.

A. C. 1973.—To relate all the kinds of visions would take too much room,—their variety being so great ; for illustration, however, it may be expedient to mention two, from which the nature of the rest may appear.

A. C. 1974.—After a disturbed sleep, about the first watch, there was presented a most pleasant sight, consisting of garlands as of laurel, perfectly fresh, disposed in a most beautiful order, having a sort of living motion of such elegance and neatness as cannot be described for their beauty and harmony, and for the affection of blessedness which thence flowed. They were in a double series at a little distance from each other, arranged together to a considerable length, and constantly varying their state of beauty.

Afterwards there succeeded another sight still more beautiful, in which was somewhat of celestial happiness, but it was only obscurely visible. It consisted of infants engaged in celestial sports, who affected the mind in a manner inexpressible.

When these sights were passed, I discoursed with spirits concerning them, who confessed that they had seen the first in like manner as I had done, but the other only obscurely, so that they could not be positive what it was. Hence there arose indignation among them, and afterwards by degrees, envy, because it was said that angels and infants saw it.

* * * * *

Their envy was such that it not only caused in them the utmost uneasiness, but even anguish and interior pain, and yet it was occasioned solely by this circumstance that they did not see the second sight as well as the first.

The eyes have a great influence upon the appetite. If we see an article of food of which we are very fond, at once the salivary glands begin to act and pour their juices into the mouth. In common speech it "makes the mouth water," while the tissues of the mouth and stomach seem to demand it earnestly.

But if the article of food presented to our eyes be

very disagreeable to us, instantly the little ducts and passages close up. There is no saliva upon the tongue ready to receive the unpleasant morsel, and if we persist in looking at it, the stomach will express its dislike in a very violent manner.

In the preceding lessons you have been taught about the organ called the eye, through which the soul sees into this world.

You have also been taught of many things seen in the other world. All of this is concerning the human eye.

The following lessons are about the eyes of animals. Those of many beasts are made like ours—they seem to be quite as perfectly constructed, and some of them can see much *more* perfectly than human beings.

But there is this remarkable difference. What *they* see concerns only their life in this world. What *we* see concerns not only our life here, but chiefly our life in the spiritual world.

But the eyes of less perfect animals are constructed differently. When you are older you can study about the *use* of the eyes of different animals, and you will find this to be a very interesting study.

Some animals have no eyes, as oysters, clams, and fishes living in caves.

In animals of a very low grade the eye consists of an optic nerve which terminates in a loop covered with a coloring matter called pigment.

This is the simplest kind of an eye, and is called an ocellus.

Several such eyes grouped together are called ocelli.

GOADBY, p. 221.—The Leech has ten ocelli dotting the upper margin of the expanded suckorial lip.

The Sea-worm has four of them, quite large ones, on the upper part of the head, and nearly one hundred smaller ones in rows and groups in all the prominent lobes about the mouth. But in animals of a little higher grade the eyes are reduced to two.

Thus the Snail has one simple eye or ocellus mounted on the tip of each of its two long tentacles. These eyes consist of a globular lens, with a transparent skin in front (cornea), a colored membrane behind (choroid coat), and a nervous network (retina) behind that membrane.

PACKARD, p. 280.—Insects, flies for instance, have compound eyes. In these the rounded or globe-shaped cornea is made up of a vast number of little six-sided corneas crowded together, forming the basis of long, tiny eyes that are cone-shaped. A side view of these cone-shaped bodies makes them appear like a vast number of tiny bottles lying side by side. The bottoms of the bottles form the facets or corneas, and their small ends meet at the optic nerve behind. A thread from the nerve

passes into each little bottle or cone (giving the power of seeing to each one).

In insects these eyes form rounded bodies variously colored—white, yellow, red, green, purple, brown, or black.

In Lobsters and Crabs, the eyes are on a sort of stem, and muscles attached to them under the sclerotic coat enable them to turn and move. But other animals of this kind have immovable eyes.

The eyes of the Lobster are constructed on the same plan as those of insects with one exception. The facets in the eyes of insects are six-sided, while in the Lobster they are square.

In the eyes of fishes which often dive down deep into the ocean, where they are under great pressure, and then come up to the surface, where they are exposed to the full blaze of the sunshine, the sclerotic coat is not merely a tough fibrous membrane, but it is strengthened by a cartilaginous cup, and sometimes by one made of bone.

The cornea of fishes is generally flat. The Owl has a very rounding or convex cornea, but the crystalline lens is flat.

In the Cod and Haddock, on the outside of the choroid coat is a most beautiful membrane of a brilliant silver shine.

Animals living entirely in the water, have neither eyelids nor tears.

The Shark, however, has eyelids, while the Snake has none.

The eyes of animals that have a backbone are generally on opposite sides of the head, but in the Flat-fishes both are on the same side. Usually both eyes see the same object, but in most fishes they are set so far back that each eye sees a different object.

The pupil in most of the Vertebrates is round, but it may be diamond-shaped as in frogs, or vertically oval as in crocodiles and cats, or transversely oval as in geese, doves, and horses, as well as in all animals that chew the cud. (ORTON, page 184.)

In proportion to the size of the animal, the eyes of the Cuttle-fish are the most perfect and the largest of all the animals without a backbone.

They resemble the eyes of more perfect animals in having a crystalline lens, with a chamber in front (open, however, to the sea-water) and a chamber behind filled with vitreous humor. (ORTON, p. 182.)

Insects do not have a crystalline lens, but the cornea is constructed so as to act as a lens. It is usually rounded before and behind, so as to act as the crystalline lens in higher animals.

In many animals the cornea is small compared to the size of the sclerotic coat; but in the porcupine the cornea extends over half the ball of the eye.

Birds have very large eyes compared with the size of their bodies.

There is a delicate black membrane in the eyes of

birds called the pecten, or marsupium, that does not exist in the human eye. It begins in the back part or bottom of the eye, pierces the vitreous humor, also the retina and choroid coat, and attaches itself to the crystalline lens. (In some birds it does not go so far.)

It is highly vascular (or filled with vessels), and is folded exactly like the plaits of a fan.

An artery and a vein are supplied to each fold. When removed from the eye and pulled open, it may be spread out into a strip of continuous ribbon-shaped membrane. The use of the marsupium is not well-known, but it is believed to be a means of bringing more blood into the vitreous humor to nourish it.

Many animals, as the cat, have a membrane with a brilliant metallic lustre, usually green or pearly, lining the back part of the retina.

This makes the eyes of such animals luminous in the dark.

ENCYCLOPEDIA OF COMP. ANAT., VOL. I, AVES.—Birds have three eyelids, two of them move vertically, (like the human eye) and the other sweeps over the eyeball horizontally from the inner to the outer side of the globe.

This is a very thin membrane, transparent in some birds, in others of a pearly-white color.

There are but few birds that possess eyelashes. Of these the Ostrich is an example; also the Horn-bills and the Owls. But in Owls they are to be considered rather as feathers with short barbs than eyelashes.

The eyes of animals express their character much more clearly than those of human beings. This is because they are not capable of thinking about their expression and correcting or concealing it.

The eyes of birds of prey have a fierce and cruel look.

Ferocious beasts express their evil nature in their eyes.

The comfortable easy life generally led by cats has not changed their nature, which is evil. Their eyes are not pleasant to look at, especially in the dark.

Serpents use their eyes to charm their prey, rendering it helpless by the steady gaze of their glittering eyes, which have an infernal expression. How different is the timid, gentle look in the eye of a dove!

Gentle beasts also have very pleasing eyes, such as oxen and cows and sheep. There is an affecting, pathetic look in the eyes of the doe. There is a pretty story of one whose little fawn was about to be carried off by a man on horseback. The doe ran and placed her forefeet against the horse's side, while tears ran down from her eyes. This touched the feelings of the man so much that he dismounted and placed the fawn by its mother's side.

The Ear and Nose.

Ps. xciv. 9.—He that planteth the ear, shall He not hear?

ISA. LIX. 1.—Behold the Lord's hand is not shortened, that He cannot save, and His ear is not heavy, that He cannot hear.

Ps. LXXVIII. 1.—Hearken, O my people, to My law incline your ear to the words of My mouth.

Ps. v. 1.—Attend to my words, O Lord, perceive my solicitude.

Ps. xxxi. 2.—Incline unto me Thine ear, speedily liberate me.

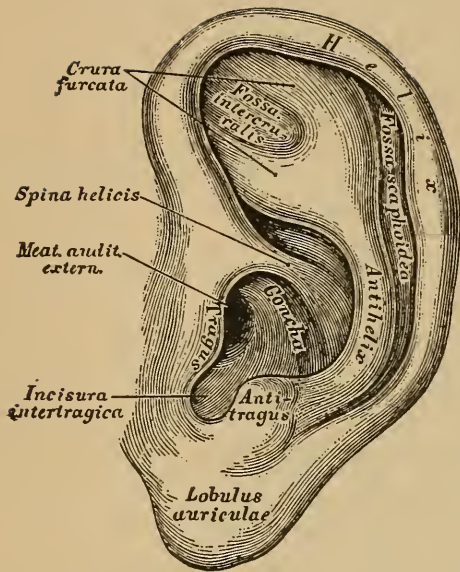
REV. II. 29.—He that hath an ear, let him hear what the Spirit saith to the Churches.

MARK, VII. 32-35.—And they bring to Him one that was deaf and speaking with difficulty, and they beseech Him that He might put His hand upon Him.

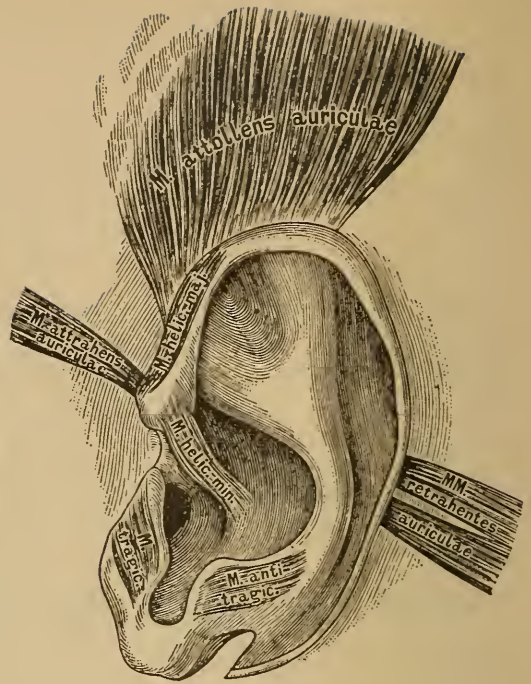
And having taken him from the people by himself, He cast His fingers into his ears and spitting out, He touched his tongue.

And having looked up into heaven, He sighed and saith to him, Ephphatha, that is, Be opened.

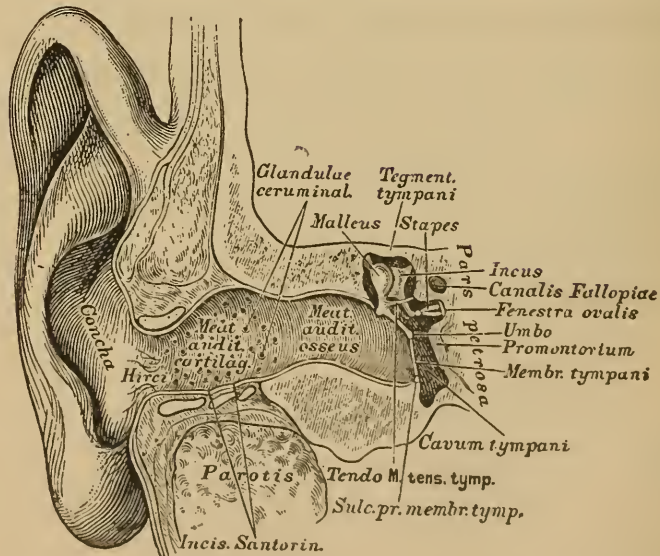
And straightway his ears were opened and was loosed the bond of his tongue, and he spake rightly.



THE AURICLE.



THE MUSCLES OF THE AURICLE.



THE EXTERNAL AUDITORY CANAL AND THE TYMPANIC CAVITY.

THE EAR.

THE EXTERNAL EAR.

THE only parts of the ear that we can see are the auricle, or outside ear, and a little of the passage called the auditory canal, leading into the head.

You have learned, in the Infant Lessons, that these form only the external part of the ear, and that the most important parts are deep in the head.

They are covered over, even there, by a very hard roof of bone—the hardest bone in the body.

The entire ear is divided into three distinct parts, namely, the external ear, already mentioned; next, the middle ear; and beyond that—or more deeply in the head—is the internal ear. This internal ear, as you can see by a picture of it, is farthest from the entrance or auditory canal.

The auricle, as you can tell by taking it between your fingers, is made of a substance which is a good deal softer than bone, and harder than flesh, called cartilage. It has many folds and high places, like little ridges or hills, with valleys and plains between them.

Each ridge and fold has a name, of which you may, with profit, learn two—the concha, or low space around the entrance to the auditory canal, and the lobule, which is the fleshy, rounded base of the auricle.

But the cartilage does not form the entire auricle ; there is none in the lobule.

The auricle has two sets of muscles ; one set spreads over different portions of the ear, but does not go beyond it ; and the other set connects it with the side of the head.

In man these muscles are very small, thin and flat, and not much under the control of the will, so that the human ear never moves back and forth ; but in very many animals these muscles are extremely flexible, giving the ear power to flap up and down at pleasure, and to take positions that express its owner's feelings.

The cartilage of the auricle passes into the auditory canal, and forms it for about half its length. Then it becomes bony to the end of it. Of course, the entire canal is lined with a membrane, or thin skin ; and at its end another membrane, called the drum, or tympanum, is stretched over it, entirely closing the passage or canal.

Just where the cartilage ends, and the bony part of the auditory canal begins, lie the little factories that produce the substance called ear-wax, which protects the ear from the visits of insects, its odor being, generally, strong enough to repel them.

But if an insect does not mind this, and crawls into it, he is liable to be smothered, as it is soft and will stick to him.

The following extracts from the Heavenly Doctrines of the Lord's New Church are about the external ear. What is related took place in the spiritual world, and Swedenborg wrote it down:

A. C. 4656.—There was a spirit who spoke with me at the left auricle, where are the elevator muscles of the auricle. He said that he does not reflect at all upon what others say, but merely takes it in with his ears. When he spoke, he, as it were, belched out his words. Hence, it was given to know that interior things were not in his speech, thus but little of life. It was said that such as attend but little to the sense of a thing, are they who belong to the cartilaginous and bony part of the external ear.

A. C. 4654.—There were spirits with me who flowed rather strongly into the thought, when things which were of Providence were being treated of.

The angels said that they were spirits who, when they lived in the body, and prayed for anything, and did not obtain it, were indignant, and on this account led themselves into doubt concerning Provi-

dence ; but still, when they were out of that state, they exercised piety according to what others said ; thus they had been in simple obedience. It was said that such belong to the province of the external ear, or that of the auricle. They also appeared there while they spoke with me.

A. C. 4657.—There are spirits who have sometimes spoken with me, but muttering, and that nearer the left ear, as if they wanted to speak in the ear, so that no one should hear. But it was given to tell them that this is not fit in the other life, because it shows that they have been whisperers, and thence they have also now been imbued with the nature of whispering, and that many of them are such that they observe the vices and blemishes of others, and tell them to their companions when no one hears, or while others are present, into the ear ; and that they see and interpret all things in a sinister manner, and set themselves above others.

In the other life such speech is heard more loudly than open speech.

S. D. 4779 m.—There was a spirit with me, who, while such things were treated of as related to Providence, inflowed very powerfully into the thought * * * and as often as

he did so I was harassed with anxious thoughts about that matter. It was afterwards said to me that the spirit who did this pertained to the province of the external ear, and, in fact, to that of the auricle, where the fleshy lobe hangs beneath the cartilaginous part, or, rather, where the thick membranous cartilage is; and it was said that his disposition was such, that when, in the life of the body, he had prayed for anything and did not obtain it, he would be exceedingly indignant, and come into doubt about Providence. But yet, when he was out of that state, he had still obediently practised piety.

THE MIDDLE EAR.

THE middle ear is a small space just behind the drum. This space of the middle ear is also called the tympanum. It contains three bones :

One is shaped something like a hammer, and is called the malleus.

One is shaped something like an anvil, and is called the incus.

One is shaped something like a stirrup, and is called the stapes.

These bones are bound closely together by muscles. The hammer or malleus touches the drum of the ear, then the anvil or incus comes next and still farther on is the stirrup or stapes, which touches the wall at the farther side of the middle ear.

In this farther wall is an opening called the oval window, only it is not open at all, for the foot or bottom of the stirrup fits into it and closes it up. Even when the stirrup is taken out, this window is not entirely open—a thin membrane is stretched over it on the other side of the wall, like another little drum.

There is also another little window in this same wall but of a different shape; it is quite round, so it is called the round window. It has a membrane stretched over it, but it is not stopped up by a bone, as is the oval window.

The use of the bones in the middle ear is to convey the vibrations of sounds through it to the nerve of hearing which is still farther on, lying in the internal ear. It is well known that sounds travel through solid substances much more quickly and distinctly than through the air.

There is something else besides these bones in the middle ear that is very interesting.

It is a passage called the Eustachian tube, leading down from the ear into the pharynx. The pharynx is the passage through which the air goes down

to the lungs, in breathing. Therefore the air can pass through it up into the Eustachian tube.

If there were none going through the Eustachian tube up into the middle ear, the air outside would press very hard against the drum, just as it presses against a thimble or small cup when you suck the air out of it, and this would stretch the drum of the ear, which is a delicate membrane, and, perhaps, displace the bones, thus causing deafness.

The Eustachian tube is mentioned several times in the Memorable Relations of our Lord's New Church.

In the Arcana Cœlestia, in reference to the people of the Most Ancient Church, it is written:—

A. C. 1118.—Their breathing * * * did not enter the ear of another through the external way and beat on something which is called the drum of the ear, but through a certain way within the mouth, and indeed through something there which is called at the present day, the Eustachian tube.

A. C. 7359.—The breathing (of the spirits of Mars) entered through the mouth, and through a way within the mouth, in fact through the Eustachian tube, into the brain.

A. C. 10587.—(The inhabitants of the Fourth Earth) think within themselves, and the ideas of thought are communicated to another by

means of a certain gliding into the interiors of the ears, through a way unknown on this earth, yet known to learned anatomists, for there is a certain canal within the mouth, which is called the Eustachian tube, which is open in the mouth, and terminates in the chamber of the ear, and is encompassed with a thin membrane. Through this canal the respiratory air glides with a delicate sound and thus the speaking thought is communicated. This is effected by means of the atmosphere.

Spiritual Diary, 1541.—The speech (of the inhabitants of Mars) is a certain tacit speech, and is of a more subtle atmosphere, which is directed towards the mouth and there it enters, and so proceeds through the Eustachian tube, which, as appears, is their organ of hearing. With such a speech did one speak to me. It entered through the lips, the fibres of which were disposed so as to receive its diversities; and so it penetrated through the Fallopian aqueduct, and thus upwards. It is very clearly perceived, and is a far fuller and more perfect speech than that of the ear, for it carries many things all at once.

S. D. 1658.—The sound of the speech (of the spirits of Jupiter) flows in through a different way, namely, through the Eustachian tube.

THE INTERNAL EAR.

IF the stirrup be taken out of the oval window into which it fits so nicely, and the membrane be cut away that is stretched over it like another little drum, it would open a passage into the innermost part of the ear that is called the internal ear.

This is the most important part of the whole ear. We might compare it to an entrance hall or vestibule of a house, with a room on each hand; only in the ear, the room on each side of the vestibule has a different name and shape from the rooms in a house.

The room, however, that you would enter by going through the oval window, is called the vestibule; the room to the right is made of passages—three of them, as you can see by a picture of them—that curve round, like a half-circle, so they are called the semi-circular canals.

The room on the left has curving passages also but of a different shape.

These passages curve spirally, very much like a snail shell, so this room is called the cochlea, a word meaning snail shell.

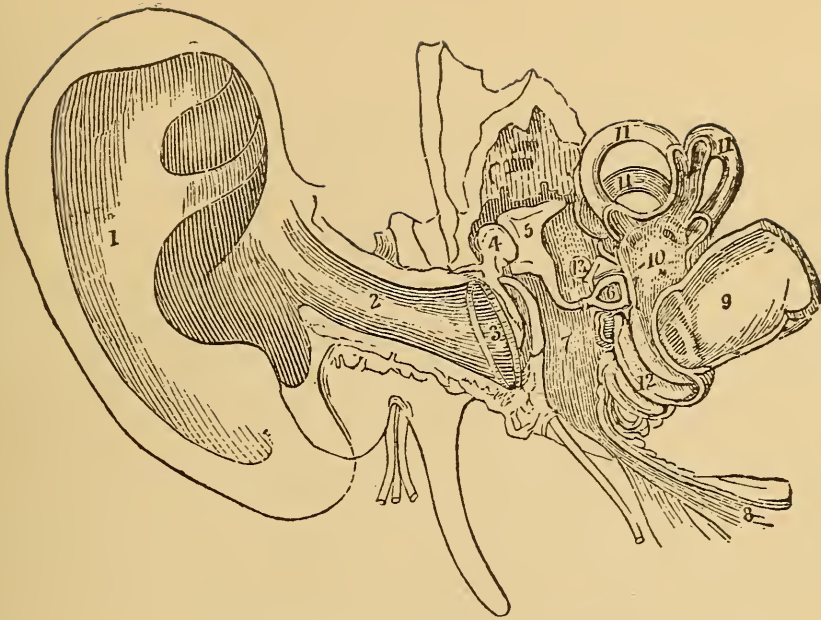
All three of these rooms in the internal ear, taken together, are called the labyrinth, because they have passages that lead round and round, from which,

if you were small enough to get into them, you would find it very difficult to get out—just like a labyrinth. These winding passages of the labyrinth are channeled in the hard bone, so they are called the bony labyrinth. They are all lined with a membrane that adheres more closely to their walls than the papering to the walls of a room.

And there is something in them that is very interesting. It is another labyrinth inside, or within the one you have just learned about, but made of a membrane. It has the same general shape as the bony labyrinth, but is so much smaller that there is room for a fluid around it, in which it lies. And this is not all. The membranous labyrinth is itself full of a fluid; it is into this fluid, which looks like water, that the nerve of hearing, the auditory nerve, comes down from the brain and spreads out; it divides into delicate little twigs, each tiny twig ending in a tiny, little, soft body called a gland.

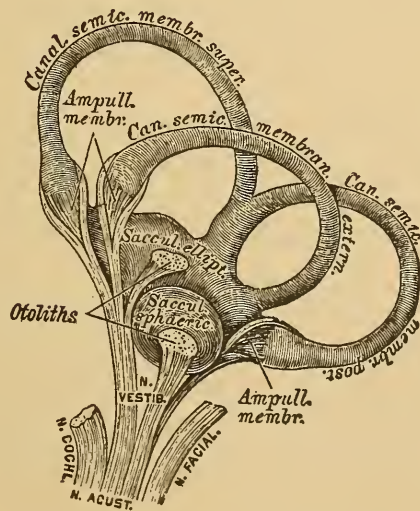
You might think, perhaps, that this membranous labyrinth floats quite free in the bony canals, rising and falling and bumping against the hard walls all around. But this is not so. It is tied at various points by little bands and cords so as to keep it floating in the centre, equally distant from the walls on all sides.

Arteries come into all these winding passages and spread themselves out into a net-work of little branches. From the blood in them the fluids are secreted that fill



DIAGRAMMATIC VIEW OF THE EAR.

1. Pavilion. 2. Meatus externus. 3. Membrana tympani. 4, 5, 6. Chain of Bones. 7. Cavity of tympanum. 8. Eustachian tube. 9. Meatus internus. 10. Vestibule. 11. Semicircular canals. 12. Cochlea. 13. Stapedius muscle.



THE MEMBRANOUS LABYRINTH.

(Diagrammatic.)

both labyrinths. And veins also are there to take away the surplus blood.

Sounds come in through the auditory canal in waves, such as are made in water when a stone is thrown into it, and pass along the bones of the middle ear, through the oval window into the internal ear, where their vibrations pass through the fluids in the passages and touch the auditory nerve.

The tiny branches of this nerve carry the exact impression of the sound to the brain, where the mind is. So, it is not the ear that hears; the ear is only an organ for the soul to use while it is in the body.

To hear means to obey.

When a child hears his parents' commands he should obey them.

This is the way for a child to make the best possible use of the organ of hearing,

The eyes help in hearing. That is because we have learned how the lips should be placed to make a certain sound or to pronounce a certain word.

If a near-sighted person wishes to hear more distinctly, he puts on his eye-glasses; and persons who are entirely deaf can tell what another is saying if they have learned to understand the motions of the lips.

DIVINE TEACHINGS CONCERNING THE EAR.

A. C. 4652.—At times, when spirits have spoken with me in the midst of the company of men, some of them have supposed, because their speech was heard so sonorously, that they would be heard also by those who were there present; but reply was made that it is not so, inasmuch as their speech flows into my ear by an internal way, and human speech by an external way.

A. C. 4653.—The spirits who correspond to the hearing, or who constitute the province of the ear, are such as are in simple obedience, viz., who do not reason whether a thing be so, but who believe it to be so because it is said to be so by others; hence, they may be called obediences.

They are of such a quality, because hearing is to speech as the passive is to the active, or as he who hears a person speaking, and acquiesces, and hence also in common discourse, to *be hearing any one* is to be obedient, and to hearken to the voice is to obey.

There are many differences of the spirits who correspond to the ear—that is, to its

functions and offices; some have reference to each of its little organs—to the external ear, to the membrane thereof, which is called the drum of the ear, to the interior membranes called windows, to the hammer, the stirrup, the anvil, the cylinders, the cochlea; and some have reference to parts still more inward, even to those substantiated parts which are more proper to the spirit, and which, at length, are in the spirit, and at last are inmosty conjoined with those who pertain to the internal sight, from whom they are distinguished by their not having so much discernment, but assenting to them as passive..

A. C. 1953.—The ear cannot know, still less perceive speech. * * * The ear only discerns the articulate sounds.

A. C. 946.—Concerning the things in the human internal ear, an entire book could be filled with the stupendous and unheard of things.

A. C. 322.—Spirits have hearing so exquisite that the hearing of those in the body cannot be compared to it.

A. C. 2072.—Interior hearing and obedience (are expressed in the Word) by “the ear.”

A. C. 3869.—When the things that are heard penetrate to the interiors, they are changed into what is like sight, for the things which are heard are seen interiorly.

A. C. 1460.—Cognitions * * * in childhood never come from within, but from the objects of the senses, especially from the hearing.

A. C. 9311.—“To hear,” in the Word, means, not only simply to hear, but also to receive in the memory, and to be instructed; and also to receive in the understanding and to believe; and also to receive in obedience and do.

A. E. 14.— * * * There are two senses given to man which serve as means to receive the things by which the rational is formed, and also the things by which man is reformed, namely, the sense of sight and the sense of hearing; the other senses are for other uses. The things which enter by the sense of sight, enter into his understanding and illustrate it. * * * But the things which enter through the sense of hearing, enter into the understanding, and, at the same time, into the will; and, therefore, by the hearing is signified perception and obedience.

The following Quotation shows how the impressions of sounds made in talking reach the mind:

A. C. 3342.—All speech that is perceived with the ear, when it ascends toward the interiors, passes into ideas not unlike those of visual things, and from these into intellectual ones, and thus there is effected a perception of the sense of the words.

There is another Quotation showing that what is heard is seen in the mind:

A. C. 4658.—To the interiors of the ear pertain those who have the sight of the interior hearing, and obey what its spirit there dictates, and who give apt expression to its dictates.

A. C. 2542.—Ears, in the internal sense of the Word, signify obedience; from the cause also of the correspondence which is between hearing and obeying, which correspondence lies hid in the very expression to hear, and especially in the expression to hearken; the origin of this correspondence is from the other life, where they who are obedient and dutiful pertain to the province of the ear; yea, correspond to the hearing itself, which is an arcanum not yet known.

EAR-RINGS.

IN several numbers of the Heavenly Doctrines mention is made of ornaments for the ears.

In ancient times, very differently from now, people put on garments and ornaments to express their thoughts and affections.

At the present time we wear clothing for covering, for warmth, and for what we consider adornment, without any thought of expressing our states of mind by it except in a very general way.

But in ancient times, each article of clothing and each ornament was a sign of a certain state of the thoughts and affections of the wearer, and was worn to express that state.

Inasmuch as the ear and the hearing meant obedience, therefore an ornament worn in the ear meant the same thing.

That is the reason why both men and women wore ear-rings in those early times.

Concerning this we find the following in Arcana Coelestia, 4551 :

“And the ear-rings which were in their ears.”
That hereby are signified things actual appears from the signification of ear-rings as being insignia

representative of obedience, which is from this, that the ears signify obedience, and the things of obedience are things actual; for to obey, involves to do in act.

Also in A. C. 3263, at the end it is written "That at Gideon's request every one shall give the ear-rings of his prey, for they had ear-rings of gold because they were Ishmaelites,"—where ear-rings of gold signify those things which are of simple good."

A. C. 10,402.—It is stated that an ear-ring is a representative token of obedience; hence, to put it on denotes to obey.

ON SOUND, AND HOW IT COMES TO THE EAR.

"If you look at a large bell when it is struck, you can see a quivering or shaking in it.

If you put your hand upon it, you can feel the quivering. You can see the same thing in the strings of a piano when they are struck, and in the strings of a violin as the bow is drawn over them.

The wind makes the music in the Æolian harp in the window by shaking its strings. And when you speak or sing, the sound is made by the quivering of two flat cords in your throat.

But when a bell is struck, how does the sound get to our ears? The quivering, or vibration, as it is called, of the bell, makes a vibration in the air, and this vibration is continued along through the air to the ears.

The vibration can go through other things besides the air. It will go through something solid better than it will go through the air. Put your ear at the end of a long log, and let some one scratch with a pin at the other end, and you can hear it very plainly. But if you take away your ear from the log, you cannot hear it, for the vibration, or sound, cannot come to you so far through the air.

The nearer you are to where the sound is made, the louder it is, and the farther the sound goes the fainter it is. It is said to die away as it goes; that is, the vibration becomes less and less, till after awhile it is all lost.

It is like this: If you drop a stone into water, it makes little circular waves, one within another which spread out larger and larger till they cease, and the water again becomes still. It is just so with the waves or vibrations of sound in the air.

I have told you how sound goes through the air, and through other things, but how is it that we hear sound when it comes to our ears?

This vibration does not go into the brain where the mind is; it only goes into the ear, and there it stops. How can the mind know anything about it?

The vibration goes into the ear to a membrane called the drum, and shakes it, and this shakes a chain of little bones in the middle ear. The last of these bones is fastened to another little drum, and, of course, this is shaken.

This drum covers an opening to some winding passages in bone. These passages are filled with a watery fluid.

Now, the shaking of the second little drum makes this fluid shake. The nerve of hearing feels this shaking of the fluid, and tells the mind in the brain.

See, now, how many different shakings there are for every sound you hear.

First, the bell or whatever it is that makes the sound, shakes. Then there is a shaking of the air. This shakes the drum of the ear. Then the chain of bones is shaken. The farthest one of them shakes another drum, and this shakes the fluid in the bony passages.

All this takes place every time you hear a sound; and when you hear one sound after another coming very quickly, how the vibrations chase each other, as we may say, into the ear! But they are not jumbled together. They do not overtake one another. Every vibration goes by itself; and so each sound is heard distinct from the others, unless the vibrations come very fast indeed. Then they make one continued sound. Each puff of a locomotive, when it starts, is heard by itself.

The vibration of one puff gets into the fluid in the labyrinth before the one that follows it, but as the locomotive goes on, the puffs get nearer and nearer together, and when it goes very fast, they are so near together that the vibrations, or waves, do not go separately into the ear; so they make a continued sound.

The more of these vibrations that the ear can catch, the more distinct is the hearing.

Some animals, that need to hear very well, have very large ears.

Sometimes when we wish to hear more distinctly, we put up the hand to the side of the head. This gathers the waves of sound, and turns them into the ear.

Those who are deaf sometimes have an ear-trumpet for the same purpose.

Some animals can turn their ears so as to hear well from different directions. How quickly the horse pricks up his ears when he hears or sees something that he wants to know more about; and then he can turn his ears backward when he wants to do so.

It is in such timorous animals as the hare, the rabbit and the deer, that we see the ears most movable.

Their ears, too, are large, so they can hear very easily. You have learned how the eye is guarded. The ear is well guarded, also. Not its outer part, but it is the inner parts or passages where the hearing is really done that are so well guarded.

You have learned that they are filled with a fluid. The nerve of hearing has its fine delicate fibres in these passages. They feel the shaking of the fluid and send an impression of the motion up to the brain where the mind is.

Now it is necessary that this part of the hearing apparatus should be well guarded ; it is for this reason that these passages are inclosed in the hardest bone in the body."—*Hooker Childs' Book of Nature*.

This borrowed account of the ear gives a very careful description of *how* we hear ; but, no more than the borrowed account of the eye, does it teach what is essential for us to know concerning the best and highest use of the organ.

Although it admits that it is the mind that hears, it says no word about the use of hearing as bearing upon our preparation for life in the other world, when this is the most important part of its use.

The organ of hearing, so wonderfully constructed, is given you that you may hear the things which are important for your eternal welfare, and that hearing, you may obey them.

You are to obey, first, your parents, and next your teachers, who take the place of your parents in school—that you may be prepared to obey the Lord when you are grown up ; and you learn to obey Him because such obedience will lead you into His kingdom in the heavens, and thus into the utmost possible happiness.

So you see that the proper use of the eye and of the ear will lead to the same happy result in the other world.

The following pages give you some information concerning the ears of animals. The more carefully you study this subject, the more clearly you will see that the organ of hearing of each one is perfectly adapted to its needs as a creature having a distinct individual life in this world only.

THE EARS OF ANIMALS.

“THE organ of hearing is not so complicated in all classes of animals [as in man] and is found to be more and more simplified as we descend the series.

In birds, the middle and internal ears are constructed on the same plans as in the mammals, but the outer [or external] ear no longer exists, and the auditory canal at the surface of the head behind the eyes, is merely surrounded by a circle of peculiarly formed feathers. The bones of the middle ear are also less numerous, there being generally but one.

In reptiles, the whole exterior ear disappears; the auditory passage [or canal] is always wanting, and the tympanum, or drum of the ear becomes external.

In some toads, even the middle ear is also completely wanting. The fluid of the vestibule is charged with salts of lime, which frequently give it a milky appearance, and which, when examined by the microscope, are found to be composed of an infinite number of crystals.

In fishes, the middle and external ears are both wanting; and the organ of hearing is reduced to a membranous vestibule situated in the cavity of the skull, and surmounted by semi-circular canals, from one to three in number. The liquid of the vestibule contains chalky irregular forms [something like stones] called Otoliths, the use of which is doubtless to render the vibrations of sounds more distinct.

In crabs, the organ of hearing is at the base of the large antennæ. It is a bony chamber, closed by a membrane, in the interior of which is suspended a membranous sac filled with water. On this sac the auditory nerve is expanded.

In the cuttle-fish the vestibule is a simple excavation of the cartilage of the head, containing a little membranous sac, in which the auditory nerve terminates.

Finally, some insects, the grasshopper, for instance, have an auditory apparatus, not situated in the head, as with other animals, but in the legs; and from this fact we may be allowed to suppose that if no organ

of hearing has yet been found in most insects, it is because it has been sought for in the head only.

It appears that the part of the organ of hearing which is always present in all animals furnished with ears, is precisely that in which the auditory nerve ends. This, therefore, is the essential part of the organ of hearing. The other parts of the apparatus—the tympanum, the auditory passage and even the semi-circular canals are merely to make the sound more distinct. So, we may conclude that the sense of hearing is dull in animals where the organ of hearing is most simple: and that animals which have only a simple membranous sac, without tympanum and auditory canal, as the fishes, or without semi-circular canals, as the crabs, perceive sounds in a very imperfect manner."—*Agassiz & Gould, Principles of Zoology.*

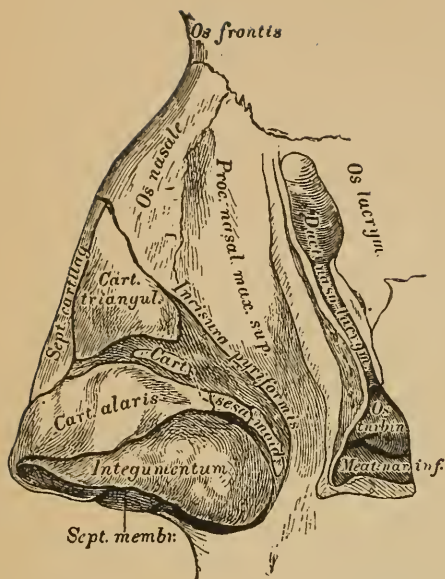
THE NOSE.

GEN. II. 7.—And the Lord God formed the man
dust from the ground, and breathed into
his nostrils the breath of lives.

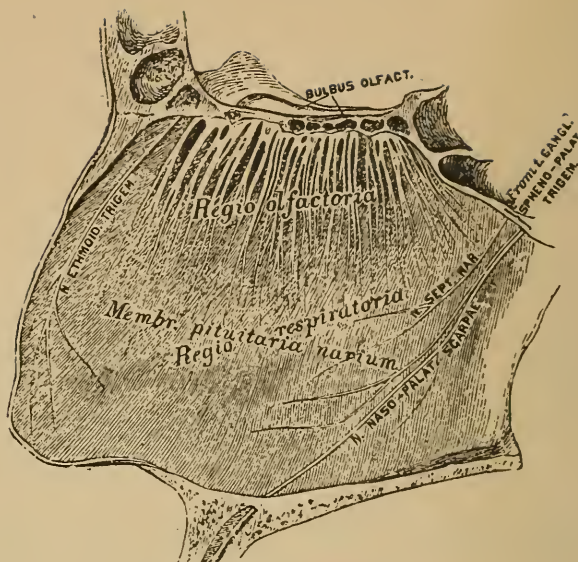
EX. XV. 8.—And with the wind of Thy nostrils the
waters were heaped together.

II SAM. XXII. 9.—There went up a smoke out of His
nose and fire out of His mouth devoured.

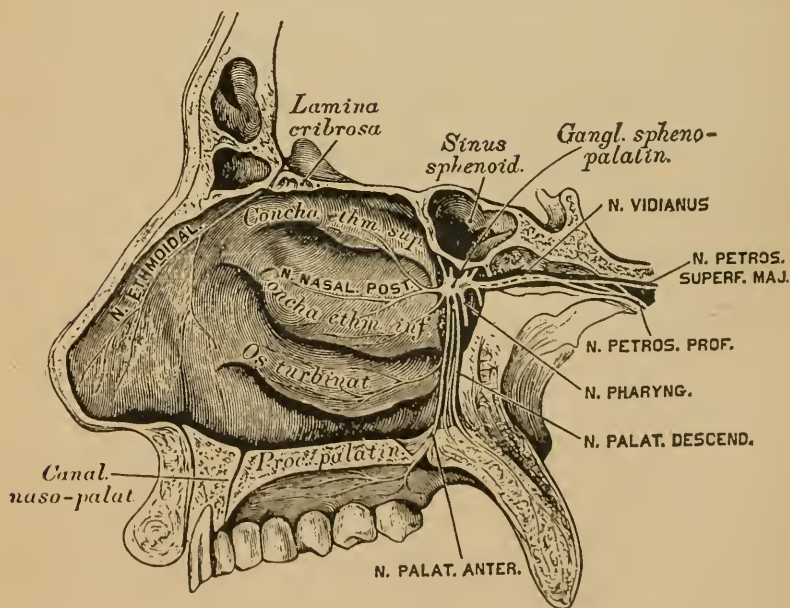
II KINGS XIX. 28.—Because thou hast been moved
against me, and thy confidence has come
up into mine ears, therefore will I put
my hook into thy nose, and my bridle
in thy lips, and I will lead thee back by
the way by which thou camest.



THE CARTILAGES OF THE NOSE.



THE OLFACTORY NERVE.



TURBINATED BONES AND CRIBRIFORM PLATE.

THE NOSE.

THE nose consists of two parts—the external, or outside nose, and the internal, or inside, which is also called the nasal fossæ.

The different parts of the external nose have all been named, as well as the inside: there is the root, or bridge, which connects it with the forehead; then, there are the sides, the tip, the wings and the nostrils.

The sides of the nose, slanting upward from the cheeks, are united along the top, and form the dorsum, which is the Latin name for the back.

The partition that divides the nose into two passages is made of cartilage in the front, or lower part, where you can take it between your fingers; farther back, under the bony part, it is made of bone.

In the anatomies, this partition or septum is called the columna.

The entire lower part of the frame-work of the nose is made of cartilage, as you can easily see by pressing it a little with your fingers. You can find just where the bone of the nose ends and where the cartilage begins. This cartilage is not all in one piece ;

there are four pieces of it that are bound to each other and to the bony part of the nose by a strong membrane.

The internal nose, the nasal fossæ, are two irregularly-shaped passages in the middle of the face. They open in front by the nostrils, and are called the anterior nares. The openings into the pharynx behind are called the posterior nares. These passages lie in the bones of the face.

The nerve of smell, the olfactory nerve, comes down from the brain, and spreads out all over the surface of these passages, and upon the bony septum, but not upon the lower part of the internal nose that is made of cartilage. As this surface is very small, therefore, in order to make more space for the olfactory nerves to spread out upon, there are three little scrolls of bone, one above another, lying along each wall.

These little scrolls curve out into the nasal fossæ opposite to each other, but with the bony septum between.

They are covered with the same kind of thick skin or membrane as the passages in which they lie, and their curved surfaces make a much larger space for the olfactory nerve.

This membrane is continuous with the skin on the outside of the body, of which you will learn some interesting things when you come to study about the sense of touch.

At the entrance of the nostrils, hairs are found growing all around each orifice.

They prevent very fine particles of dust from entering the nasal passages.

The following is an extract from the work of a great anatomist upon the subject of these hairs :

“The use of the vibrissæ [or hairs] becomes very evident in serious diseases, when in consequence of the hurried respiration, dry particles floating in the air become attached like a fine powder to them.

The collection of the particles of dust around the nostrils often warns the physician of the serious nature of the disease.”—*Cruveilhier*.

We find upon reviewing what has been said about the nose, that its frame-work is composed of bone, cartilage and membranes.

Membranes are of very different texture and character in different parts of the body, depending upon the uses that they have to perform.

You have already learned a little about the thick one that lines the nasal cavities, called the pituitary membrane. This is different from the one that binds the four pieces of cartilage together which form the lower part of the nose. It is made of fibres that cross each other so as to make a kind of web or tissue, so it is called fibrous tissue.

Upon the frame-work of the nose muscles are spread out, and various kinds of pipes or tubes ramify

through its substance in every direction. Some of them are too small to be seen without a microscope, and some are quite large, though generally hidden from view by the skin and muscles.

There are arteries bringing red blood from the heart to nourish all the parts of the nose, and sometimes it seems as if it liked to stay there as well as in the cheeks, for we frequently see quite red noses.

Then, there are veins to take away the surplus blood to the heart.

There are nerves (which are tiny pipes) that come down from the brain, and give the power of feeling and the very slight power that the nose has of moving, and they also bring the finest kind of blood, called the animal spirit.

Then there is another set of pipes, called the lymphatics, that gather up the surplus of the finest blood and carefully carry it back into the circulation, so that none of it may be wasted.

The cartilage of the lower part of the nose is very useful in rendering it flexible, in enabling it to move with the muscles of the cheeks and lips, so that the mind can use it as a means of expressing its feelings.

This would be impossible if the nose were all one solid piece of bone down to the very tip.

The cartilage has another use—being quite soft, it will yield to the force of a blow and recover its former

shape very soon, when if it were made of bone, it might be broken quite flat.

In the skull, just above the nose, is a curious place in the bone where it is pierced full of tiny holes, and for this reason, is called the cribriform plate. You could very nearly cover the cribriform plate with the end of your forefinger. A little sharp point, or projection of flat bone rises up from the middle of this plate; its shape is very much like a cock's comb, for which reason it has received this name in Latin; it is the *crista galli*.

Two little lobes of the brain, called the olfactory lobes, lie one on each side of the *crista galli*, just over the cribriform plate, but they do not stop up the little holes.

Fine threads of nerves start out from these olfactory bulbs, and pass through the small holes, leaving space however for the passage of other things down from the brain.

These tiny nerves are the only ones that give the sense of smell. They are fine, delicate pipes, and through them flows down some of the finest blood to nourish the delicate, internal membrane of the nose, in which they terminate and spread out.

So you see that they have two uses, first to convey the impression or perception of odors up to the brain so that the mind may perceive them, and second, to bring down fine pure blood from the brain—where it is made—to the nose.

The particles of any perfume or odor enter the nose and touch these delicate nerves, so you can see that smelling is one kind of sense of touch.

The nose is an extremely useful organ. If you have never learned anything about it before, you will be surprised to find what a variety of uses it has, without counting that of beautifying the face, for even the ugliest possible nose makes the face look better than no nose at all. It has a great number of uses. Good odors and perfumes pass into the head through the nose and go up to the brain where they help make the animal spirit, which contains the very life of all the blood in the body.

It is proverbial that cooks who constantly inhale the odors and aromas of the food that they prepare for the table, eat less than other persons, and are generally very fat and rosy.

When bad odors touch the olfactory nerves, they cause a general recoil of every tiny branch and thread of them, and an effort to shut themselves up and keep out such unwelcome intruders. Almost involuntarily the lungs cease to draw in the air that is loaded with such impurity, and if it be from some visible object, the nose turns away as far as possible.

It seems aware that offensive odors contain poisons injurious to the health of the body. So the nose is planted there on the heights of the face, like a faithful sentinel, to give warning of danger.

Then it affords a passage for the air on its way to the lungs. This enables us to breathe without letting the air pass through the mouth, which is not a good way of breathing.

It acts as a strainer of the air; first the hairs or vibrissæ take a good deal of dust, and then the air, in going through the curving passages, flows, not in a straight line, but in a spiral, so that the fine specks of powdery dust that get past the vibrissæ are brought in contact with the damp walls of the passages that lead down to the lungs. By and by, when you have learned the structure of the lungs and of the pipe that leads to them, you will understand how important it is that the air going down into them should be as pure as possible.

As before stated, the air spins round and round in passing through the nasal passages, and so every part of it comes in contact with the moist walls again and again, and this powdery dust sticks to them, and cannot get any farther.

The nasal passages are not only damp, but they are warm. In winter, when the air is too cold to be good for the lungs, it spins round through these passages, and has the chill taken off by coming in contact with the walls.

In every season of the year it is important to breathe through the nose.

In winter, to warm the air; in summer, to strain it of dust, as well as to take in good odors; in spring, that

the perfume of flowers, and in autumn, that the aroma of fruits may go through it up to the brain.

The nose helps in talking. You have heard persons talk with a peculiar sound that is called a nasal twang? This means that they are supposed to talk too much through the nose, but the exact contrary of this is true, which you can prove by talking while you hold the nose shut tight between the thumb and finger.

So, the nose is useful in helping to produce clear, pleasant sounds of the voice in speaking.

Then, the nasal passages are used by the brain as a highway to send off the secretions of various kinds that would clog it, and prevent the satisfactory performance of its work.

These secretions pass down through the cribriform plate into the nasal fossæ. Their downward passage is often facilitated by sneezing.

You will find a still more extended account of the nose and its uses in Swedenborg's "Animal Kingdom," which, it is hoped, you will have the privilege of reading and studying when you are older.

It will be useful for you to have a summary, or a short review, of the uses of the nose which you have just learned, so as to readily commit them to memory.

1st.—To perceive good odors and send them up to the brain to nourish it.

2d.—To warn us of bad odors.

3d.—To afford passage for the air on its way to the lungs.

4th.—To strain the air from dust.

5th.—To warm the air in winter before it gets to the lungs.

6th.—To help in talking.

7th.—To afford passage for the secretions sent away by the brain.

DIVINE TEACHINGS CONCERNING THE NOSE.

A. C. 96.—That it is said that Jehovah God inspired through the nostrils, this is as follows: anciently and in the Word, by nostrils was understood whatever was grateful from its odor, which signifies perception.

A. C. 3103.—The nose signifies the life of good from respiration which is there.

A. C. 8286.—The wind from the nostrils of Jehovah signifies life from the Divine, which is the life of heaven.

A. C. 4624.—They who correspond to the nostrils in the Grand Man excel in perception.

A. C. 4627.—They who have reference to the interiors of the nostrils are in a more perfect state as to perception than those who have reference to the exterior.

A. C. 925.—That an odor signifies what is grateful and acceptable, and thus that odor in the Jewish Church was also representative of what is grateful, and is attributed to Jehovah or the Lord, is because the good of charity and the truth of faith from charity corresponds to de-
ful and sweet odors. That this correspondence is, and what it is, may appear from the spheres in the heaven of spirits and angels. There, there are spheres of love and faith which are manifestly perceived. * *

To these spheres, the spheres of odors in the world correspond, as is evident from this, that the spheres of love and faith, whenever it is well pleasing unto the Lord, are manifestly changed in the world of spirits into spheres of sweet and delightful odors, and are manifestly perceived.

A. C. 1514.—Spheres are also rendered sensible by odors, which spirits feel much more exquisitely than men; for, what is wonderful, odors correspond with spheres. They who have been accustomed to play the hypocrite and to impose on others by false pre-

tences, and have thereby contracted a nature accordingly, when their sphere is changed into an odor, it is like the stench of vomiting. Such as have studied the art of eloquence, with the end that all things be for the admiration of themselves, when their sphere is changed into an odoriferous one, it is like the smell of burnt bread. * * They who have lived in violent hatred, revenge and cruelty, their sphere, when changed into odors, has the stench of a carcass. The stench of mice exhales from those who had been in sordid avarice. The stench of the house lice from those who persecute the innocent.

A. C. 4624.—As to the correspondence of the sense of smelling and thence of the nostrils with the Grand Man, they who are in common perception pertain to that province, so that they may be called perceptions; to them corresponds the smell, consequently its organ. Hence, also, it is that to smell, to scent, to be quick-scented and also the nostrils are predicated in common discourse of those who, in matters of difficult investigation, come nearest the point in question and likewise who perceive; for the interior things of the expressions of man's speech derive much from correspondence with the Grand

Man, because man, as to his spirit is in society with spirits, and as to his body, with men.

There are many more teachings in the Heavenly Doctrines about the nose and the nostrils and what they signify.

These you will wish to read, when you are older, in connection with a more extended study of the nose, for these Lessons are only the beginning of knowledge concerning it.

But the teachings that are quoted here, if carefully studied, will enable you to think properly about the nose—that is, to think what its spiritual, or internal, meaning is, and thus fill your mind with heavenly thoughts concerning it.

In the *Arcana Cœlestia*, n. 2995, is some instruction about people who lived on this earth long ago, who were in the habit of thinking in this way concerning everything in the world.

“The men of the Most Ancient Church, inasmuch as in single the things of nature they saw somewhat spiritual and celestial, so that natural things served them only as objects of thinking concerning things spiritual and celestial, were enabled thereby to discourse with angels, and to be with them in the kingdom of the Lord, which is in the heavens, at the same time that they were in His kingdom on earth, or in the Church: thus, natural things with them were conjoined with spiritual

things, and corresponded to them in all respects. But the case was otherwise after those times when evil and falsity began to prevail, or when, after the golden age, the iron one began."

Thus, the people of the golden age thought spiritually concerning every earthly or natural object; this is what all the angels do, and this is what the people of the Lord's New Church must learn to do if they desire to have their thoughts and feelings in harmony with those of the inhabitants of heaven.

Earthly, or natural and material things, thus regarded and studied, lead the mind up to the Lord Himself, in whom should centre all the thought and affection of human beings; for He is the Source of all knowledge of all kinds, and of all good loves.

ORNAMENTS FOR THE NOSE.

IN the Part on the Ear, you had some teaching about the wearing of ear-rings in ancient times, and you learned that people wore them as a sign of a state of obedience to the Lord; which was a good state.

They were worn by whole nations that were of an obedient character, as you were taught by a quotation from *Arcana Cœlestia*, n. 3263, on this subject.

There were states of obedience with them from different causes, which differences the ancients expressed by wearing rings elsewhere than in the ears.

They wore them between the eyes, though they called them by the same name as that given to the earrings.

They were attached to the root, or bridge, of the nose, where it joins the forehead.

In the story of Isaac and Rebecca, in the Word, Gen. xxiv. 47, it says: "And I asked her, and said, Whose daughter art thou? And she said, The daughter of Bethuel, the son of Nahor, whom Milach bare unto him, and I set an ornament on her nose, and bracelets on her hands."

The explanation of this, in 3103 of the Arcana Cœlestia, all the girls who study these Lessons will have no difficulty in learning by heart.

"And the man took an ornament of gold."

That hereby is signified Divine Good, appears from the signification of an ornament of gold, that it is good; and whereas the subject here treated of in the internal sense is concerning the Lord, therefore it is Divine Good.

In ancient times, when worship in churches was representative, and they knew what it signified, when marriages were entered into, it was customary to give the bride an ornament of gold, and bracelets, be-

cause the Church was represented by the bride, its good by the ornament of gold, and the truth by bracelets; and because it was known that conjugal love, which is of the bride and the wife, descended from the marriage of Divine Good and Divine Truth of the Lord.

The ornament of gold was placed on the nose, as appears also from what follows, where it is said that he set the ornament of gold upon her nose, verse 47, because the nose signified the life of good from the respiration which is there, which in the internal sense is life, and likewise from odor, which is the grateful of love, of which good is."

That an ornament of gold was a badge of marriage as to good, appears also from other passages in the Word, as in Ezekiel: "I adorned thee also with ornaments, and I gave bracelets upon thine hands and a necklace upon thy neck, and I gave an ornament upon thy nose," Chap. XVI. 11. 12. Speaking of the Ancient Church, which is here Jerusalem, which is described as a bride, to whom were given bracelets, a necklace and an ornament for the nose; the bracelets on the hands were a badge representative of truth, and the ornament on the nose was a badge representative of good.

So in Isaiah: "Because the daughters of Zion extol themselves, the Lord hath made bald the crown of their heads, and will take away the rings and the ornaments of the nose, the changeable suits of apparel and the mantles." (Chap. iii. 16, 17, 21, 22.) "The daughters

of Zion who extol themselves, for the affections of evil within the Church. See n. 2362, 3024.) The rings and the ornaments of the nose, which shall be taken away, denote good, and its badges; the changeable suits of apparel and the mantles, denote truth and its badges.

So, in Hosea: "I will visit upon her the days of Baalim to whom she hath burned incense, and hath put on her nose ornament, and hath gone after her lovers" (ii. 13), speaking of the Church perverted, and of a new one after it, where nose ornament also for a badge of the good of the Church.

When those ornaments were fitted into the ears, they signified, also, good, but good in act; and, in the opposite sense, evil in act.

A. C. 4551.—As to the ear-rings, they were of two sorts; the one kind was applied above the nose to the forehead, and the other to the ears; the former were badges representative of good, and are called *monilia* (ornaments of the nose); but the latter were badges representative of obedience, and are ear-rings; but in the original tongue they are expressed by the same term.

It is difficult for us to imagine what a lovely state of things it was when all the people put on garments and ornaments to express their affections.

It is also difficult for such a state of things to exist at the present time, because we have so many thoughts and affections that we do not wish others to see the least sign of, for they would be a discredit to us if known.

It was different with the people of that pleasant and beautiful time. They had no affections save of love and obedience to the Lord, and of love to the neighbor, and their thoughts were all in agreement with these loves. To believe a thing in the heart, and express exactly its opposite by the face and speech, as is often done now, would have been horrible to these truth-loving people, who were so good that they could discourse with the angels.

As all their thoughts and affections were so delightful, they loved to express them in all possible ways, for the sake of increasing the delight of those around them; so they put on the outward signs of their happy internal state, and wore them just as naturally as your lips wear smiles, and your eyes show a sparkling light when you are happy.

But though we are so far from that wonderful state of the people of ancient times, we can, at least, turn our faces towards it, and begin to approach it by learning to be *obedient*.

It was by obedience to the commands of the Lord that they became so good and so happy.

It was by disobedience to His commands that their descendants became so bad and so unhappy.

Since the happy childhood of the human race, in the golden age, there has been a long, dreary time of wretchedness and misery.

But now, that the Lord has come in the Heavenly Doctrines of His New Church, all may hope, by obeying them, to come into a better and still better state.

In fact, when all the people have learned the lesson of loving obedience to Him, it will bring a state of happiness greater than ever was known before since the world was created.

“Thou shalt love the Lord thy God from thy whole heart, and from thy whole soul, and from all thy forces; thou shalt tie those words for a sign upon thy hand, and *let them be for frontlets between thine eyes.*”
(Deut. vi. 4, 5, 8.)

NOSES OF ANIMALS.

SOME animals make a funny use of their noses. They dig with them to get at food that grows, or is buried, in the earth.

There is an allusion to this in a poem for children, by Mary Howitt, called “The Migration of the Gray

Squirrels." The squirrels had laid up their winter store of nuts and acorns;

"Then did the hungry, wild swine come,
And with *thievish snout* dug up
Their buried treasures, and left them not
So much as an acorn cup."

The elephant's trunk is an immensely prolonged nose. The tapirs have very long noses, which they use very much as do the swine.

THE following is an account of the nose, taken from the work of a great naturalist. It will teach you something more about noses. It is a little more difficult to understand than the borrowed accounts of the other organs, but by careful attention to your teacher's explanations it will become easy :

"The organ of smell is the *nose*. Throughout the series of vertebrates it makes a part of the face, and in man, by reason of its prominent form, it becomes one of the most conspicuous features of his countenance ; in other mammals the nose loses its prominency, and the nostrils no longer open downwards, but forwards.

In birds the position of the nostrils is a little different ; they open farther back and higher, at the origin of the beak.

The nostrils are usually two in number. Some fishes have four. They are similar openings, separated by a partition upon the middle line of the body.

In man and the mammals the outer walls of the nose are composed of cartilage; but internally the nostrils communicate with bony cavities in the bones of the face and forehead. These cavities are lined by a thick membrane, the pituitary membrane, on which are expanded the nerves of smell, namely the olfactory nerves.

The process of smelling is as follows: Odors are particles of extreme delicacy which escape from very many bodies, and are diffused through the air. These particles excite [touch] the nerves of smell, which transmit the impressions made on them to the brain.

To facilitate the perception of odors, the nostrils are placed in the course of the respiratory passages, so that all the odors which are diffused in the air inspired, pass over the pituitary membrane.

The acuteness of the sense of smell depends on the extent to which the membrane is developed. Man is not so well endowed in this respect as many animals which have the internal surface of the nostrils extremely complicated, as it is especially among the beasts of prey.

The sense of smell in reptiles is less delicate than in mammals. The pituitary membrane, also, is less developed.

Fishes, also, are still less favored in this respect. As they perceive odors through the medium of the

water, we should anticipate that the structure of their noses would be different from that of animals which breathe the air. Their nostrils are mere superficial pouches, lined with a membrane gathered into folds which generally radiate from a centre, but are sometimes arranged in parallel ridges on each side of a central band. As the perfection of smell depends on the amount of surface exposed, it follows that those fishes which have these folds most multiplied are also those in which this sense is most acute.

No special apparatus for smell has yet been found in invertebrates. And yet there can be no doubt that insects, crabs and some mollusks perceive odors, since they are attracted from a long distance by the odor of objects. Some of these animals may be deceived by odors similar to those of their prey; which clearly shows that they are led to it by this sense. The carrion fly will deposit its eggs on plants which have the smell of tainted fish."—*Agassiz & Gould, Principals of Zoology.*

THE TONGUE.

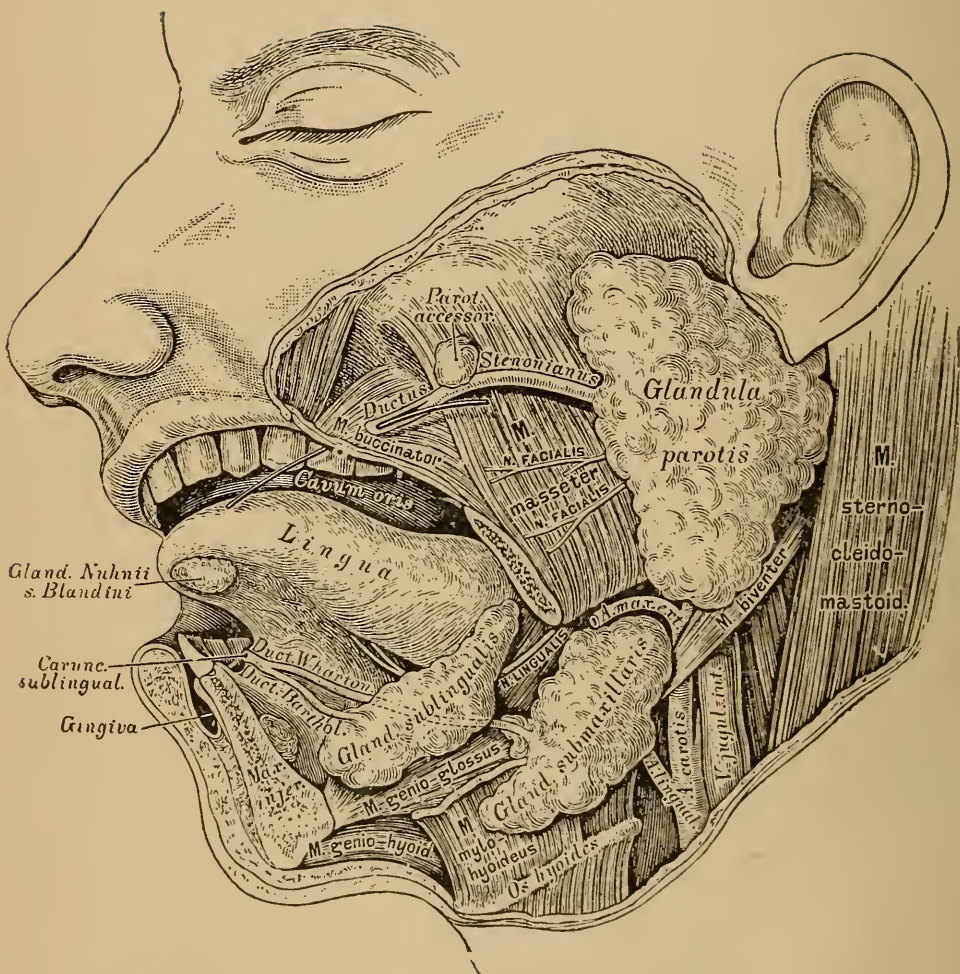
Ps. XXXIX. 2.—I said I will guard my ways from
sinning with my tongue.

Ps. CXIX. 172.—My tongue shall proclaim Thy Word,
for all Thy commandments are justice.

ISA. XXXV. 6.—Then shall leap as a hart the lame,
and shall sing the tongue of the dumb.

Ps. LXVI. 17.—Unto Him with my mouth I cried,
and He was extolled under my tongue.

Ps. XII. 4.—The Lord doth cut off all lips of flat-
terers, the tongue speaking great things.



THE SALIVARY GLANDS AND SOME OF THE MUSCLES OF THE TONGUE.

THE TONGUE.

The tongue lies in the hollow chamber that fits it perfectly, and yet gives it room to move, for the lower jaw, which forms the lower part of this chamber, swings on a hinge, and lets the jaw drop whenever the tongue presses downward. The lower jaw is subordinate to the tongue, as well as all the other parts around it and near it. Among these are the salivary glands, which are soft bodies that have branches of arteries all around and through them, bringing blood from the heart. They are so formed as to have the power to draw out or secrete a fluid from the blood, called saliva, that flows down through the pipes or ducts to the mouth.

It flows down whenever the tongue sucks, and this it does whenever there is any need of saliva to soften the food, or to moisten the mouth and throat.

THE TONGUE.

There are three principal pairs of salivary glands.

The *Parotid*, lying on the cheek, around the bottom of each ear.

The *Submaxillary*, lying under each lower jaw.

The *Sublingual*, lying under the tongue.

There are many others besides.

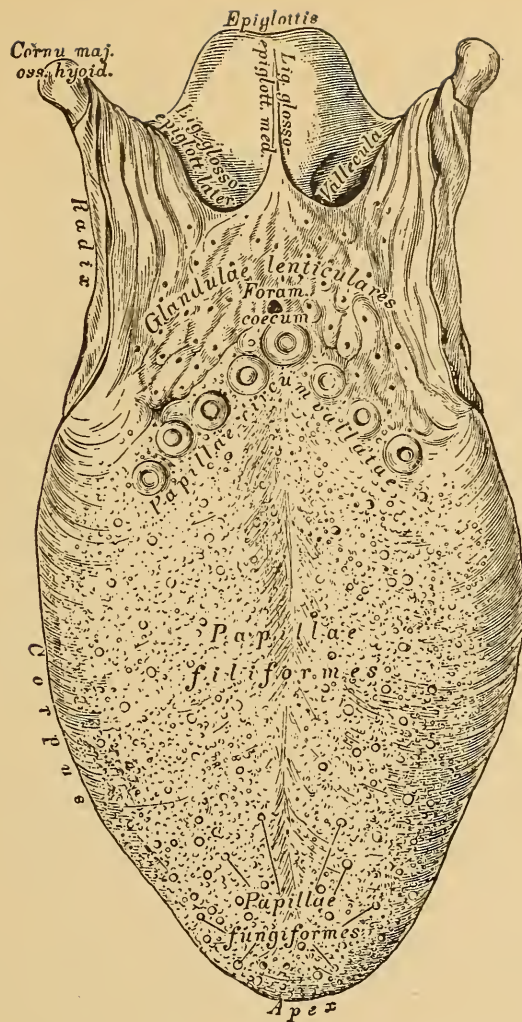
When the body is in health, there is no delay in the obedience that these parts yield to the tongue, which may be compared to the chief ruler of an immense society in Heaven. This ruler, receiving his wisdom from the Lord, disposes, ordains and commands in obedience to the dictates of that wisdom. The angels of the inferior societies experience intense delight in working under the control of such a ruler.

Although the tongue can change its shape a great deal yet its general shape is described in the Anatomies as something like a pyramid. It has therefore extremities, sides and edges.

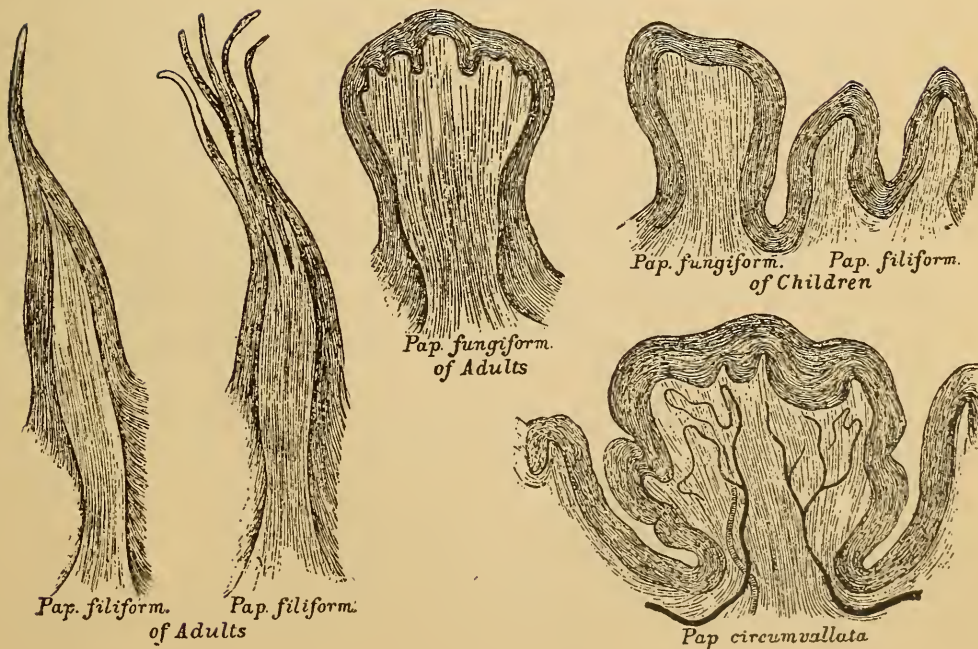
The free extremity is called the tip, or point, or apex, and the opposite extremity, lying in the back part of the mouth, is called the base. This part of the tongue is bound down and made fast by muscular bands passing from it to various points in the throat.

The upper side of the tongue is called the back, also the *dorsum* (which is the Latin name for the back).

The tongue is divided into two lateral halves by a shallow depressed line running its whole length, called the median line. The nerves of the tongue do not cross this line from one side to the other. This is proved by



THE UPPER SURFACE OF THE TONGUE.



THE PAPILLÆ OF THE TONGUE.

the fact that one side of the tongue may be paralyzed and thus incapable of moving, or tasting, or feeling, while the other side is perfectly well.

The edges of the tongue are the distinct lines where the smooth surface of the under side meets the rougher surface of the dorsum.

What makes this roughness that you can so plainly see? It is made by tiny bodies like little tongues, called papillæ, lying thick and crowded on its upper surface.

Though they are called little tongues, it does not mean that they are of the same shape as the large tongue.

Concerning this Swedenborg says in the *Animal Kingdom*—No. 34, Note G.

“Similitude in mere shape is of no consequence, so long as there be corpuscles that perform a similar use. The same thing obtains in all the other members and organs; as in the eyes where the globular parts in the vitreous humor are so many little eyes—a fact which is best seen in the eyes of the bee and the fly. In the lungs, the least vesicles are so many little lungs, etc.”

There are three different kinds of papillæ on the tongue:

Those of the first class, called the mushroom papillæ, scattered and grouped around its edges and over its

surface, are the organs that take the first taste of the nutrient essences of the food, imbibe them with their little mouths and transmit them through continuous ducts and channels immediately into the blood.

The papillæ or glands of the second class, called the half-lentil shaped glands, have the same use of absorbing and sucking up the finest essences of the food as the first class.

Both kinds have their surfaces perforated with tiny holes like the top of a pepper-box, or the nozzle of a watering pot. It is through these openings, which are the entrances of tiny passages or pipes, that the delicate food passes into the blood. This delicate food is of two kinds, as is proved by the following from No. 42, and accompanying note Z, of the *Animal Kingdom*. "Nature appears to have planted on the tongue glandular papillæ, or recipient and absorbent organs of two kinds in order that the purest and most simple habitus, or spirituous dews, may be sipped by these of the second kind ; the grosser by those of the first kind."

"These glandular forms then, are not for excreting saliva, but for absorbing it, and juices seethed and dissolved in it. Thus the tongue--the feeder and keeper of the entrance of the stomach and the viscera of the body, not merely prepares the table, but also takes the the first tastes of the viands, and begins the feast."

The minute particles of these viands or delicate essences and aromas of the food must be clothed with the finest saliva, so that they can pass through the tiny tubes into the veins and arteries. For the two kinds of glandular papillae which absorb it, send it away in two directions—through the veins into the blood, and through the invisible pipes of the inside coat or lining of the arteries, up into the brain.

That it goes into the veins is proved by several passages in the *Animal Kingdom*, of which one is found in No. 72 and accompanying note *N*:

“Sensation itself assures us that when pleasant, rich and spirituous fluids are kept in the mouth, they vanish away entirely, without a drop passing into the æsophagus: A supply is, in fact, continually required and eagerly demanded by the numberless ramifications of the jugular veins which redden the fauces. Moreover, the cranial or carotid blood is constantly deprived of its serum in the numerous salivary glands; of its nobler essences in the sensoria of sight, hearing, smell and taste, and of its very spirits in the cerebrum and cerebellum; hence, arid, slow, hungry and thirsty in the veins, it burns to be recruited by the fresh and first-born chyle of the mouth.”

“From these causes there arise in all the veins, in the branches of the jugulars particularly, a thirst and desire of imbibing the liquids and juices expressed from the

food, and thus of reabsorbing, and, as it were. of ruminating their saliva."

The papillæ of the third class are the true organs of taste. They are the most numerous of all, and have several names, probably because they are capable of taking different shapes according to the character and quality of the particles of food that touch them. Some anatomists call them cone-shaped, others pyramidal and villous; this last name is because they are so numerous and lie so close together that they look like the pile of velvet.

Each tiny papillæ has a minute loop of a nerve extending spirally into it. Through these nerves the impression flies up to the brain that causes the sensation of taste.

In fact, there are nerves coming down to the tongue from three distinct regions of the brain—from the cerebrum, the cerebellum and medulla oblongata or beginning of the spinal cord in the brain. Each set of nerves has its own separate use to perform in the tongue's three-fold function of motion, feeling and taste.

The nerves of taste are most numerous and most sensitive on its tip, where the food is first received, for it is just there that the decision must be made to retain it, or to reject it.

There are three membranes or coverings spread out over the thick substance of the tongue. The outside

one has little pouches or pockets to admit and cover the papillæ, very much as a glove admits and covers the fingers.

Under this outside covering is the second or middle membrane that does not cover the papillæ at all. on the contrary, the papillæ pierce it and pass through it. When taken off and held up to the light, it looks like a sieve, being full of tiny holes, through which the papillæ pass; one anatomist quoted by Swedenborg, calls it "a beautiful network "

The third, or internal membrane, lying under the first and second, forms the foundation, so to speak, of the papillæ, for they arise from it. This membrane is composed of numerous threads of nerves interwoven so closely as to make a kind of web; from it the tiny loops of nerves pass up into the papillæ.

Under these three coverings lie bands of muscles of two general kinds:

1. External muscles, or those that pass from the tongue to points outside of it.
2. Internal muscles, or those that form the substance of the tongue, and do not pass out of it.

EXTERNAL MUSCLES.

There are four pairs of external muscles, and they fasten the tongue to several places, chiefly to a bone in the throat called the hyoid bone, that is curved to look something like a horseshoe.

Some of these muscles go to the two tips of the hyoid bone, called the horns, some to its sides and others to its base. You can feel this bone in the throat by pressing hard on the muscles just under the lower jaw.

One pair passes into the tongue from the lower jaw where it is attached just under the chin. A side view of each muscle of this pair makes it look fan-shaped, as its fibres ray or spread out in the tongue very much like the ribs of an open fan.

These four pairs of external muscles take their names from a combination of the Latin or Greek names of the points or parts to which they are attached.

If you learn carefully the following list of words, you will have no difficulty with the names of the muscles and of their attachments:

Os hyoides—hyoid bone.

Genion—the chin.

Omos—the shoulder.

Sternum—the breast-bone.

Glossus—the tongue.

Mylos—a mill, the lower jaw.

As the lower jaw forms an important part of the mill in the mouth where the food is crushed, the word *mylos* is used to mean the lower jaw.

There are two sharp bones projecting downwards from the skull, one on each side of the mouth, behind. These sharp bones are called the styloid processes. Muscles passing out from the tongue are attached to them.

Some of these names are changed a little when combined, but so little that you can easily tell what they mean.

The *mylo-glossi* muscles pass from the lower jaw to the tongue.

The *stylo-glossi* muscles pass from the styloid processes to the tongue.

The *hyo-glossi* muscles pass from the hyoid bone to the tongue.

The *genio-glossi* muscles pass from the chin to the tongue.

There are five more pairs of muscles connected with the tongue. Of these, Winslow, a great anatomist quoted by Swedenborg, says: "The muscles that move

the hyoid bone belong likewise to the tongue, and are the principal directors of its motions."

Like the muscles previously mentioned, their names are a combination of the names of the points to which they are attached. They are the

Mylo-hyoidei which pass from the lower jaw to the hyoid bone.

Genio-hyoidei which pass from the chin to the hyoid bone.

Stylo-hyoidei which pass from the styloid processes to the hyoid bone.

Omo-hyoidei which pass from the shoulder to the hyoid bone.

Sterno-hyoidei which pass from the sternum to the hyoid bone.

Besides these muscles there are cords called ligaments that fix the tongue in the mouth. The principal one, called the frænum or bridle, is in plain sight under the tongue. Right in the line of it are the openings of the ducts coming from the maxillary glands. Sometimes, upon suddenly lifting the tongue, you can see the saliva spurt out of these openings.

When this ligament is too short, and holds the tongue down, a person is said to be tongue-tied.

INTERNAL MUSCLES.

Winslow says that "the internal muscles of the tongue, or rather the fleshy or muscular fibres of which the mass of the tongue is composed, and which do not pass out of it, are of three kinds—longitudinal, transverse and vertical. * * * All these fibres are interwoven with each other—so as to look like the threads in a braid, or the bands in basket work—They terminate about either the borders, the base or the apex of the tongue, without passing beyond its substance.

BLOOD-VESSELS;

ARTERIES AND VEINS.

"The principal blood-vessels of the tongue are those that appear so plainly on its lower surface on each side of the frænum. They are four;—an artery and a vein on each side, named the sublingual or ranine veins and arteries.

The veins lie next to the frænum, and the arteries on the other side of the veins.

Winslow, as quoted in the *Animal Kingdom* N. 27.

These veins convey the blood of the tongue into the jugular veins, through which it descends toward the heart.

The ranine arteries are branches of a branch of the carotid artery through which the blood flows up to the tongue from the heart.

The heart, by contracting, forces the blood out into its great pipe or artery, called the aorta.

Through the branches of the great aorta, which divide like the branches of a tree, until they become very tiny pipes indeed, the blood flows to the very extremities.

But, if the contractions of the heart were the only influence at work, the blood would never reach its destination.

Each organ of the body invites and attracts it with just as much force as that exerted by the heart to send it out. Between these two forces the parts the most distant from the heart receive a proper supply of blood. Indeed, the smaller the pipes, the faster it flows.

As these two forces are equal, they are said to be in equation, and this equation is constantly maintained while the body is in a state of health. But it is frequently destroyed by wrong ways of living, and then the body is sick. For instance, it is a very common thing for more blood to go to the brain than is called for or needed. It floods the reservoirs there, and not infrequently bursts the pipes.

But of this you will learn more when you study the interior organs of the body.

The more extensive and manifold the use of any organ, the better the blood it requires. As the tongue "performs a greater variety of uses than any other member of the organic body," you can easily judge of the quality of the blood that flows into it to meet this demand.

This blood expends itself in nourishing the various parts of which the tongue is composed. It supplies material for new tissues to take the place of those that may be worn out, for this wearing out process is constantly going on.

It brings particles of fat, that, deposited along the course of the arteries, form a reserve of nourishment, and also serve to oil the tissues that come in constant contact with each other when the tongue is in motion.

This blood, thus drained of its best and richest stores, passes through the pipes called capillaries, so small as to be invisible, into the tiny veins.

The veins receive it along with all the nourishment that they can possibly suck in, among which, as before mentioned, are some of the best essences and aromas of the food that is crushed up in the mouth.

USES OF TONGUE.

It is interesting to notice what a variety of shapes the tongue can take.

By pushing it out you can make its tip very pointed and small; then by pressing the teeth upon it the pointed tip disappears. it looks rounded and blunt, while the entire tongue seems quite flat.

In fact, it takes a different shape for every use it has to perform, and, as already mentioned, it has a greater variety of uses "than any other member of the organic body."

All its particular uses may be classed under three general classes, as follows:

First—Receiving the food:—Upon this subject we find the following in the *Animal Kingdom*, No 34.

"The primary, proper and natural use of the tongue consists in sucking, sipping, eating and drinking, or, to speak more plainly, in receiving food for the nutrition of the body and the blood, in working this food about and forming it into a ball, and in rolling the ball into the æsophagus and swallowing it."

The above shows you that the general use of receiving the food is made up of a great variety of operations, namely—sucking, sipping, eating, drinking, work-

ing the food about, forming it into a ball, rolling the ball down and swallowing it.

The second use of the tongue consists in tasting :

“A second proper office of the tongue consists in feeling and perceiving what is about to be received with a view to becoming acquainted with its qualities—that is, in tasting. This office makes it necessary that the tongue * * shall have the power of properly expanding and relaxing, extending and retracting its papillæ, of applying them to objects and touching the objects at all points.” A K 35.

Taste is occasioned when the matter to be tasted—attenuated and dissolved to some extent in the saliva, and warmed in the mouth * * affects and moves the papillæ, whereby the motion impressed is conveyed to the general sensorium, and excites in the mind the idea of salt, acid, alkali, sweet, vinous, spiritous, bitter, aromatic, hot, pungent acid, austere, or tastes compounded of these. Hence it easily appears why the same object occasions different tastes, according to the difference of age, temperament, disease, sex, habits, and according to what the person has been tasting previously.”—Boerhaave, as quoted in the *Animal Kingdom*, N. 30.

The third use of the tongue is talking. This is not, however, a natural use—it has to be acquired by practice.

“ By the office and gift of speaking, the tongue feeds the higher principles—the very mind itself ; by the office of eating, it feeds the lower principles, or the body. Thus it may be said to afford food to both soul and body—wherefore it guards the meeting of the two ways which lead to the regions of the body, to the viscera of the abdomen, through the pharynx and æsophagus, to the viscera of the chest through the larynx and trachea, as well as the crossing which leads to the cerebrum, the hall and palace of the mind.” A. K. 36.

Swedenborg, near the close of his analysis of the tongue, makes the following summary :

“ These considerations show, not merely what is the tongue’s form, active force and power of action, but also what its substance is ; they show that it consists of nervous fibres of a threefold origin, nature and use—of blood-vessels ramifying in all directions ; of muscular fibres variously intermingled with fat, and gently bound down by soft and delicate and beautiful bands ; also of tubuli and ducts passing through the middle of the muscular fibres, and proceeding from the glands on the surface ; and of membranes, ligaments, and fine tendinous meshes ; lastly of commissures, foramina and lacunae, containing liquid, saliva and mucus.

“ The particulars [concerning the tongue] which remain to be supplied must be elicited from the neighboring parts, contiguous and continuous ; that is to say,

from the anatomy of the throat, palate, pharynx, æsophagus, &c. What is still wanting must be gathered from the origin of the nervous fibres. Anything further must come from higher powers and principles, and in the end from the highest. The simple tongues of nymphs, chrysallises, caterpillars, butterflies and the like, * * * must complete and crown the analysis."

You can see from this that no created thing has an independent life. The lowest forms depend for their existence upon higher ones, and these upon still higher and higher forms, up to the Highest—the Lord—who alone is Substance and Form.

In the Heavenly Doctrines there is a great deal of teaching about the tongue, and its use of speech in this world and the other.

A. C. 4791.—The tongue affords entrance to the lungs and also to the stomach, thus it represents a sort of court-yard to spiritual and to celestial things; to spiritual things because it ministers to the lungs and thence to the speech, and to celestial things because it ministers to the stomach which supplies the blood and the heart with aliment; that the lungs correspond to spiritual things and the heart to celestial, may be seen in N. 3635, 3383 to 3896; wherefore the tongue in general corresponds to the affection of truth, or

to those in the Grand Man who are in the affection of truth, and afterwards in the affection of good from truth.

They, therefore, who love the Word of the Lord, and hence desire the cognitions of truth and good, pertain to that province, but with this difference, that some pertain to the tongue itself, some to the larynx and the windpipe, some to the throat, some to the gums and some to the lips, for there is not the smallest thing appertaining to man with which there is not correspondence.

That they who are in the affection of truth pertain to that province, understood in an extended sense, has been given me to experience frequently; and this by manifest influx, now into the tongue and then into the lips when it was also given me to converse with them; and it was observed that some also correspond to the interiors of the tongue and of the lips and others to the exteriors. The operation of those who with affection receive only exterior, but not interior truths, and yet do not reject the latter, I felt, not into the interiors of the tongue, but into the exterior.

A. C. 4792.—Because food and nourishment correspond to spiritual food and nourishment, the taste

corresponds to the perception and the affection thereof. Spiritual food is science, intelligence and wisdom; for from these things spirits and angels live, and from these also are they nourished, and they desire and appetite them as men who are hungering do food; hence the appetite corresponds to that desire.

A. C. 1646.—The discourse of angels sometimes appears in the world of spirits, and thus before the interior sight, as a vibration of light or resplendent flame, and this with a variation according to the state of their affection in discourse.

It is only the common things of their discourse as to the state of affections arising from numberless distinct things which are thus represented.

A. C. 1647.—The speech of the celestial angels is distinct from that of the spiritual angels and is still more ineffable and inexpressible. The things into which their thoughts are insinuated are the celestials and goods of ends; and they are therefore in the enjoyment of happiness itself, and what is wonderful, their speech is much more abundant; for they are

in the very fountains and origins of the life of thought and speech.

A. C. 1648.—There is a speech of good spirits and angelic spirits, simultaneous of many, particularly in gyres or choirs; concerning which, of the Divine mercy of the Lord, in the following: The speech in choirs has often been heard by me; it is flowing as if rythmical; they think nothing of words or ideas; the senses flow into these spontaneously, and no words or ideas inflow which multiply the sense, or divert it to anything else, and to which there adheres anything artificial, or which seems to themselves elegant as proceeding from self or self-love; for this would immediately disturb; they do not stick in any word; they think of the sense; the words follow spontaneously upon the sense; they close in unities, for the most part simple, when in composites, by the accent they revolve themselves into the following one—these things come from their thinking and speaking in society, and hence the form of dicourses has a cadence, according to the connection and unanimity of the society.

Such in old time was the form of songs, and such is that of the Psalms of David.

A. C. 1649.—What is wonderful, this kind of speech having the rythmical or harmonic cadence of songs is natural to spirits, they speak thus to one another, although they are ignorant of it. All souls come immediately after into the habit of speaking in this manner.

A. C. 4803.—It is worthy of relation, what is altogether unknown in the world, namely: That the states of good spirits and angels are continually changing and perfecting, and that thus they are raised into the interiors of the province in which they are, and so into nobler functions; for in Heaven there is a continual purification, and so to say a new creation; nevertheless it is impossible for any angel ever to arrive at absolute perfection to eternity; the Lord alone is perfect, in Him and from Him is all perfection.

They who correspond to the mouth are continually willing to speak, for in speaking they find the highest degree of pleasure; when they are perfected, they are reduced to this, that they do not speak anything but what is profitable to their companions, to the common good, to Heaven, and to the Lord; the delight of so speaking is increased with them to the extent in which the lust of regarding themselves in their speech and

of seeking wisdom from their proprium perishes.

A. C. 9048.—The Lord, when he was in the world, spake as in the Word of the Old Testament throughout, at once for the angels in Heaven, and for men in the world, for His speech was in itself Divine and celestial, because it was from the Divine and through Heaven ; but the things which He spake were presented by such things as corresponded in the world ; hence those things which are of the face signify such things as are of the affections, and correspond to their functions and uses ; as the eye signifies the understanding of truth, the nostrils the perception of truth ; those things which are of the mouth, as the cheek-bones, the lips, the throat, the tongue, such things as relate to the utterance of truth.

A. C. 1637.—Amongst the wonderful things which exist in the other life, is this, that the discourse of spirits with man is in his mother tongue, which they speak as readily and skilfully as if they had been born in the same country, and had been educated in the same tongue ; and this, whether they be from Europe or from Asia, or from some other part of the globe ; likewise those who lived thousands

of years before such a language existed. Yea, spirits know no other than that the language in which they discourse with man is their native tongue. It is similar with the other languages in which the man is skilled, but except these, they have not power to utter a syllable of any other language, unless it is immediately given them by the Lord. Infants, also, who departed this life before they had learned any language, speak in like manner. But the cause is that the language which is familiar to spirits is not a language of words but of ideas of thought, which is the universal of all languages; and when they are with men, the ideas of their thought are conveyed into the words which are within the man, and this so correspondently and aptly, that the spirits know no other than that the very words are their own, and that they are speaking in their own language, when yet they are speaking in the language of the man. I have sometimes discoursed with spirits concerning these particulars.

All souls are gifted with this gift, as soon as they come into the other life, that they can understand the speech of all that dwell in the universal circle of lands, just as if they had been born in them because they

perceive whatever man thinks, beside other faculties which are still more excellent.

Hence it is that souls, after the death of the body, are able to speak and converse with all, of whatever country or tongue they had been.

On a previous page we find teaching from the Heavenly Doctrines concerning those who correspond to the mouth—the delight they find in speaking, and also the change that takes place after regeneration in the character and quality of what they say, for “when they are perfected, they are reduced to this, that they do not speak anything but what is profitable to their companions, to the common good, and to the Lord.”

From this we may know that, before they were perfected, they spoke some things that were not profitable to the neighbor, and this brings us, after studying the many uses of the tongue, to the consideration of its many abuses.

We abuse the tongue's power of tasting when we make that the chief end in eating, and so accustom the tongue to over-indulgence that it is continually and imperatively demanding things that are really hurtful to the health.

It is easy enough to fall into such habits, and is almost always extremely difficult to correct them. Children indulge in such an abuse of the tongue when

they eat more candy than is good for them. Very many grown persons over-eat, because the food has a delicious taste, and this is gluttony. This abuse of the sense of taste is a very great evil ; it has a worse effect in debasing the thoughts and feelings than drunkenness, and it is a much more common or general evil—that is, a far greater number of persons injure their powers of usefulness by over-eating than by over-drinking. This is not generally believed in the world, because the bad effects of drunkenness are so much more easily seen and recognized.

In consequence of the very frequent abuse of wines and liquors, many persons think it a sin to drink them at all ; but this is very foolish, as you may easily see by applying the same rule to solid food. There are large numbers of persons who injure themselves by eating too much : but it is not, therefore, a sin to partake of food.

Many and painful are the diseases caused by constantly cramming the stomach beyond its powers of digestion ; in numberless cases life has been shortened and usefulness curtailed, when a little self-denial would have prevented it all.

It is startling to learn (from an acquaintance of Swedenborg) that the first Divine command, given to Swedenborg, when his spiritual eyes were first opened, was to "*Eat not so much*," though he was only partaking

of a simple repast of bread and milk. He had a view of the disgusting forms, visible in the spiritual world, engendered by over-indulgence of food. This may serve as a warning to all who would be of the Lord's New Church.

How much more readily we can see that a thing is a right thing to do, and how much more readily we can force ourselves to do it, if we are careful to avoid dulling our minds and bodies with the sodden heaviness of too much food, eaten because, and only because it has an agreeable taste.

We are taught in the Heavenly Doctrines that the angels have not the sense of taste, only something analogous to it.

The evils of gluttony and drunkenness are abuses of the tongue's power of tasting.

Its still higher use of talking is also abused when it is made use of to express selfish and worldly thoughts and feelings—when it says things unprofitable to the neighbor. These unprofitable sayings are always prompted by some evil love, as we may see by reflecting upon what we have said. There is a legion of these evil loves; such are impatience, resentment, desire to have our own way at any cost, desire to rule others, unwillingness to give up what we think are our rights for the common good, repining over duties that we

have not learned to love, speaking harshly against those who have offended us, etc.

There are other and still more grave abuses of the tongue's power of talking, that we, who are of the Lord's New Church must carefully avoid.

Upon this subject there is abundant teaching and solemn warning in the Word, of which only a few verses are given here. In Matt. xii: 36-37, the Lord says:

"But I say unto you that every useless word that men shall speak, they shall give account thereof in the day of judgment."

"For from thy words thou shalt be justified and from thy words thou shalt be condemned."

And in Psalm xxxiv: 13. "Keep thy tongue from evil, and thy lips from speaking guile."

TONGUES OF ANIMALS.

The lowest animals do not seem to have tongues, the first sign of its existence is in insects—which have a mouth furnished with two lips. On the inner surface of the lower lip is attached a sort of process or protuberance, looking something like a tongue; usually it is

very short, but in bees it is long, and that of the honey-bee is hairy; and in the wasp it is split into three divisions at the end. In one kind of insect, each of these three divisions terminates in a hard tooth-like point. Another insect has only one tooth as the tongue is not split.

Some insects have fleshy tongues; in others it is more like cartilage, and some others, as the beetles, have the whole tongue hard and horny. In some cases the tongue is immovable, in others it can be thrown out of the mouth and then again drawn in. In the honey-bee the upper part of the tongue is cartilaginous; below the middle there is a membrane lying upon it, arranged like a bag. This bag first receives the honey which the tongue laps up from the flowers. The chief use of the tongue in some of the lower orders of animals is to seize the food.

Very few fishes have anything like a tongue, and when it exists it never has papillæ upon it, only hard, bony bodies resembling teeth. They seem to be made for seizing and tearing the food—it is doubtful if the sense of taste exists with them.

Reptiles show a great difference in their tongues. Some are immovable, like that of the crocodile; others, like the chameleon can protrude their tongues more than any other animal; some are long; some are so short as to be described as wanting; some are broad

and thick ; some slender ; some have very perfect papillæ ; some have none at all.

These tongues all have one function in common, which is that of seizing the food—they do not taste it.

The frog has a very curious tongue. It is fastened in front, and is free behind, so that the tip points backwards, towards the throat. There are muscles attached to it that enable the animal to dart it out of the mouth very rapidly indeed. It is covered with a viscid mucus, to which the insects adhere, that the frogs feed upon.

Snakes have long, slender tongues that are cleft or forked at the end ; they lie in a sheath in the mouth, and can be thrust out, while the jaws remain closed. The turtle has a soft, muscular tongue, with very large papillæ, arranged very regularly in a close pile. Its structure implies the power of tasting its food.

Birds have tongues made for seizing their food, not for tasting it.

Animals which taste their food generally keep it a little while in the mouth to masticate it ; but birds bolt their food without any delay.—*Cyclopædia of Anatomy and Physiology*.

The woodpecker has a very long, straight tongue, armed at the end with sharp teeth that point backward, like the barbs of a fishhook. He drills into the bark and wood of dead trees to find worms and insects to

eat. He does this drilling with the two parts of his sharp bill closed tight; but as soon as the bill reaches the worm, the two parts of the bill open and the barbed tongue is thrust forward into its body, which is thus drawn out for the woodpecker to eat.

The tongue of the humming bird is very curious. It has two tubes, placed lengthwise, side by side. At the tip of the tongue these tubes are a little separated, and their ends shaped like spoons. By means of them the honey is spooned up and flows through the tubes upon the tongue. But the bird uses its tongue in another way. It catches insects with it. The two spoons grasp the insect like a pair of tongs, and then the tongue curves inwards so as to put the insect into the bird's throat.

Very many of the more perfect animals use their tongues for seizing as well as for tasting. The cow curves her tongue around a bunch of grass before biting it off. The cat uses her tongue for toilet purposes; it is a sort of comb and brush, and washrag combined.

The giraffe winds its tongue around the leaves of trees in order to bite them off more easily.

Its tongue is very remarkable for its power of extension. The giraffe can also draw it in and contract its tip to a very small point indeed.

The tongue of the covered snail lies under the concave fold of a certain cartilage, and is covered therewith

when the snail swallows its food in the same way as the larnyx, in us, is covered by the epiglottis. Its tongue approaches in this respect to the tongues of serpents. Below it is seen a very delicate muscle, which draws the tongue, together with the whole mouth, palate, jaws, and even the brain itself, inwards into the belly, or at least into the neck. On the point of the tongue is a little horny bone, divided into two or three very tender little teeth, with which, as with a hook, the snail when it is about to eat, first lays hold of the small herb, and then suddenly draws the piece into its mouth."

"The little tongue of the naked or house snail in the fore part is of a bright or transparent red color, and covered on each side with many small parts, like the branchiæ of fish, or like a comb with a double row of teeth. These little parts grow paler towards the back of the tongue and consist of a substance between horn and bone, such as the little tongue has in its divisions."

"The tongue of the aliekruik snail, which the Dutch eat in large quantities, is inclosed in a singular cavity the whole of which, it seems, may be protruded together out of the body. It is nearly two inches long, and at the same time beautifully convoluted into spiral folds like a serpent closely coiled; and it is thus placed on the inside, in the body, so that it passes with the gullet under the brain. The part of the tongue inside the body is cartilaginous, and most elaborate in its construction."

“The tongue of the cuttle-fish which was thought to be a fungous substance, consists, I find, of seven little cartilaginous bones, which lie close to each other and are besides united by a particular membrane. The upper extremity or apex of the tongue is somewhat curved, but its lower portion is connected with some muscular and fungous flesh, in which it lies as in a hollow tube. This fleshy portion of the tongue is covered with rugæ and elegant folds, which seem to contain a great many salivary ducts. * * * The tongue and the parts belonging to it, when taken out of the beak, generally bring along with them several of the muscles. When the tongue has been stripped of its membrane, we may see by the microscope that every one of the seven small bones is provided with about sixty curved dentiform, cartilaginous papillæ (somewhat resembling the papillæ of the tongue of the ox) by means of which the cuttle-fish when feeding, is the better enabled to move its food and dispose it for an easy swallowing. The fore part of these papillæ is of a transparent amber color; but the hinder part, which constitutes the base of the tongue, is of a transparent white. If the tongue be inverted, its under side is found to resemble a regular web, produced by the combination of the cartilaginous bones already described.”—*Swammerdan* as quoted in the *Animal Kingdom*, N. 29.

THE SKIN.

GEN. III. 21.—And the Lord God made for man and for his wife coats of skin, and clothed them.

GEN. XXVII. 15.—And Rebekah took the garments of Esau, her eldest son, of desire, which were with her in the house, and put them upon Jacob, her younger son :

16.—And the skins of the kids of the goats she made to put upon his hands, and upon the smooth of his necks.

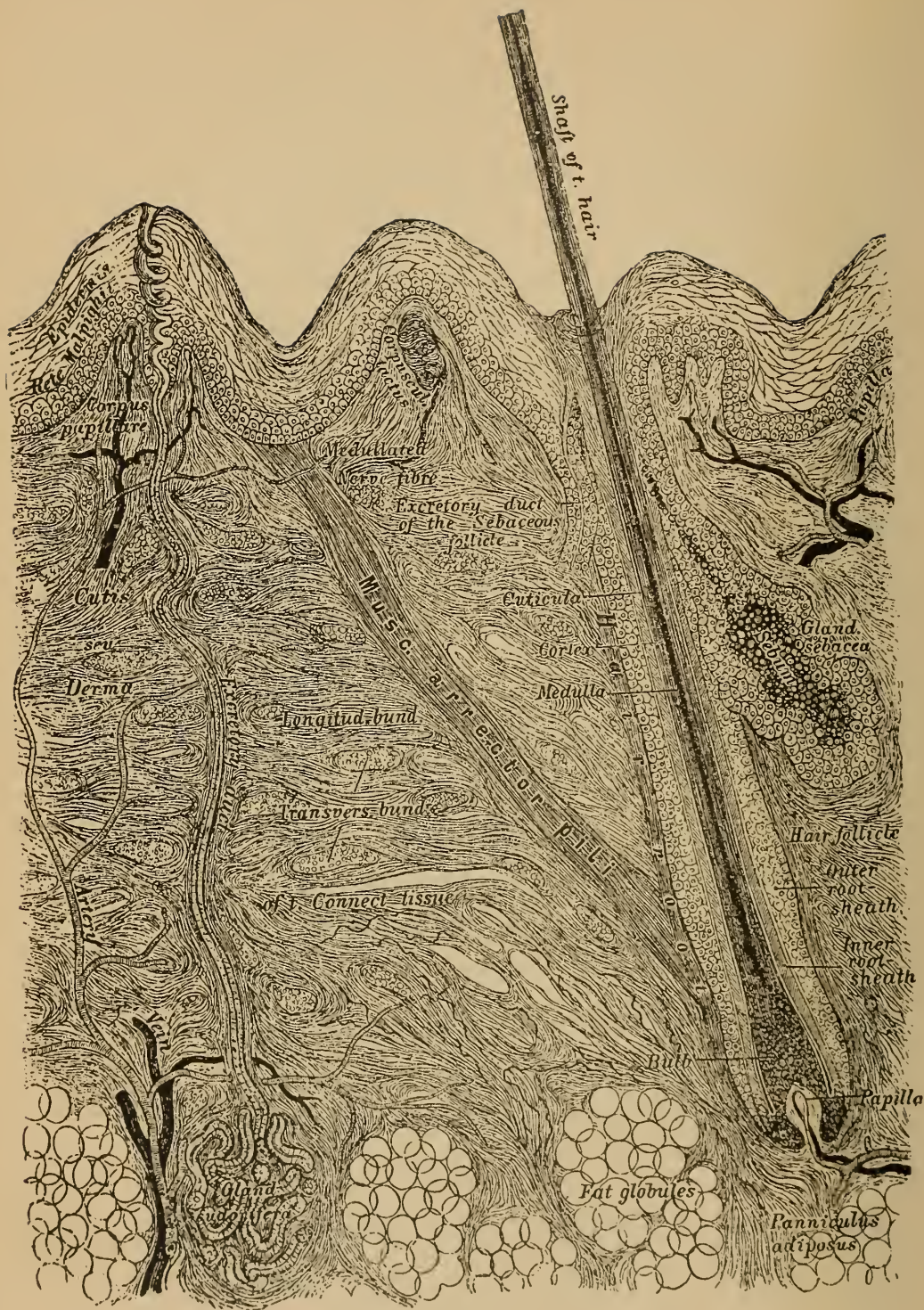
EXODUS XXVI. 14.—And thou shalt make a covering for the tent, skins of red rams, and a covering of skins of badgers, from above.

EXODUS XXXIV. 29.—And it came to pass, when Moses came down from Mount Sinai, and the two Tables of the Testimony in the hand of Moses, when he came down from the mount, and Moses wist not that the skin of his faces shone, while he spoke with Him.

30.—And Aaron and all the sons of Israel saw Moses, and behold, the skin of his faces shone; and they were afraid to come nigh unto him.

II KINGS I. 8.—And they answered him, an hairy man, and with a girdle of leather girt about the loins.

MATT. III. 4.—And the same John had raiment of camel's hair, and a leathern girdle about his loins.



VERTICAL SECTION THROUGH THE SKIN.
(Diagrammatic.)

THE SKIN.

INTRODUCTION.

IN the Chapter on the Tongue, you remember, three skins, or coverings, were mentioned—an outside one, that covered the papillæ; a middle one, pierced by the papillæ; and an internal one, from which the papillæ arise. Not only the tongue has three skins, but the whole body is covered by as many, of which the outside one is called the cuticle.

You can learn something of these skins by making experiments upon those of your own hand. Between the thumb and fore-finger they can be pinched and pulled without giving way. This shows that they are tough—you cannot easily tear them. After pulling or stretching them, if you let go, they will shrink back to their former position. This shows that they are elastic.

THE CUTICLE.

You may learn something about the cuticle from a blister, although it is not advisable to make one purposely for the sake of such knowledge. A blister

separates the cuticle from the one below. Very soon, a fluid, looking like water, fills the space between, and puffs out the cuticle. Now, even though you were to pierce it with a pin, no blood would come out, and there would be no pain. This proves that blood-vessels and nerves of feeling do not come down into it. It is not well to prick the blister open to let the fluid out (unless the skins lying under it have been injured so that the fluid is mixed with blood), for the air will then rush in to the unprotected nerves of feeling, which object to it very much. Their objection to it and recoil from it, cause a sensation of soreness. The fluid is there to protect the underlying skins until a new skin can be formed from the blood to take the place of the old one. Then this fluid passes out gradually through those tiny openings called pores, leaving the blistered cuticle dry and dead. It can then be taken off without pain. You learn from this, that one use of the cuticle is to protect all the delicate parts lying under it.

The cuticle has numberless tiny pouches that cover the papillæ, but these papillæ in the skin are not so large as those of the tongue, and the nerves coming down from the brain into them give the sense of touch, only, not of taste. Several great anatomists, quoted by Swedenborg, have written interesting descriptions of the cuticle. The following is from Heister, a famous German anatomist:

DESCRIPTION OF THE CUTICLE.

“The cuticle is a thin membrane closely encompassing the whole skin, of which it is in a manner a part, and on this account, also, is called by the Greeks, epidermis.

“The cuticle is white in the European, black in the Ethiopian, or negro.

“Its structure, or substance, consists of extremely minute lamellæ, and as it were little scales, but which are closely connected to each other, and require the microscope to show them.

“In these lamellæ there are a great multitude of little foramina affording egress to the hairs, the transpiration, and the sweat, and ingress to mercury, and other things. These foramina are commonly called pores.

“The thickness of the cuticle varies in different parts, being greatest in the soles of the feet and the palms of the hands; in other parts the cuticle is very thin.

“We see in it various furrows or lines, which are deeper in some places than in others, and exist all over the surface, but particularly in the palms of the hands.

“On the tips of the fingers the furrows are spiral, and seem to defend the excretory ducts of the cutis, which are there arranged in a regular order.”—*Heister* as quoted in Swedenborg’s *Animal Kingdom*, n. 470.

Leeuwenhoek, a celebrated Dutch microscopist, wrote about the cuticle as follows:

“I pared the skin on the inside of the hand and

fingers where it was sufficiently thick to enable me to cut off three or four lamellæ without drawing blood. At length, by repeated observations and experiments, I obtained such results, that I can state for certain that in the whole field of the external skin of the body there is no space but what is perforated with excretory vessels, through which vessels both aqueous moisture and fat exhale in a perfectly orderly way.

“Several times I applied a clean piece of glass for a moment to the face, just under the eye and close to the nose, where the skin is comparatively seldom touched or wiped, and when I submitted the glass to the microscope, I found it much stained with fat.

“Afterwards, having cleaned the glass, I wiped this part of the face and rubbed it with a clean towel until the skin became red, and in order that no portion of the fat which was on the towel should be communicated to the face by the repeated rubbing, I frequently changed the part of the towel which I made use of. Then, in less than a quarter of a minute, I again applied the glass to the clean skin, and on again submitting the glass to the microscope, I saw so incredible a quantity of fatty and most minute halitus settled upon it as scarcely any one can conceive without witnessing.

“After this, I repeatedly wiped the skin with a perfectly clean towel, and particularly that part of it to which I was about to apply the glass, and in less than a minute I applied the glass to the face, and when I looked,

as before, I again saw the fatty halitus, but separate from each other.

“Inasmuch as the vessels covering the skin lie so close together, and the skin itself is roughened by various little excavations and eminences, therefore these vessels are not distributed in an orderly and regular series. Their mouths, or orifices, look partly upwards and partly in an oblique direction.

“I pared several lamellæ from my skin, and submitted them to the microscope, and saw, with no small delight, that a little piece of skin no bigger than might be covered by a common grain of sand, was perforated with innumerable pores, which I distinguished with great clearness, the case being much as if we were to prick a little piece of paper with a very fine needle, and see the sun shining through the holes. According to the best estimates I can make, I conclude that a piece of skin the tenth of an inch long contains at least a hundred and twenty vessels.”—*Leeuwenhoek* as quoted in Swedenborg's *Animal Kingdom*, n. 478.

ANALYSIS OF THE CUTICLE.

After quoting, upon the subject of the cuticle, from several of the most learned anatomists of his time (wiser indeed, than the most learned anatomists of the present time), Swedenborg sums up all the scientifics obtained from them, in a short description of the character and uses of the cuticle. He not only sums up the knowledge

obtained from them concerning it, but he reasons from that knowledge in a manner the anatomists themselves were quite incapable of doing.

He begins the subject by saying that man derives the possibility of living in the material body from the world around him, especially from the atmospheres, of which there are three, one within and above the other; the common air, the ether, and the aura, each one purer, more ethereal, and more powerful than the last; these press upon the body at all points, on all sides, and thus hold it together. The body reacts with equal force against this force and weight of the atmospheres, and thus produces a state of things that is called equilibrium.

Owing to this perfectly equal pressure and reaction, we are enabled to move, to rise up and walk, to have our dwelling-place upon the earth, to build up our abodes there, and to live in communities.

The atmospheres have many other uses. They enable us to see and hear, to smell, taste and feel; they communicate to us their heat and cold, their dryness and moisture. They nourish, recruit, and constantly renew our blood by means of the unseen, ethereal food furnished by it, that enters the body through innumerable pores all over its surface, and also by the lungs.

The air enters the body (to the threshold only, of the blood) heavily laden, if it be pure, with rich food which the blood eagerly seizes, exchanging for it, so to speak, the impure matters made up of worn-out fluids and worn-out tissue, with which it loads the air and then

expels it lest it "should penetrate deeper than our nature allows."

Then at last, when the soul has quitted the material body forever, the earthy "and atmospheric world receives into its bosom this corporeal system (the body) reared up and composed out of its elements, and which has now ceased to live, buries it in the tomb, requires of it the materials it has borrowed, and again disperses them."

All this teaching shows what we receive from the world around us, and what from ourselves; namely, that the world sustains our bodies, so that our souls may for a time dwell in them and grow to the perfect stature of men—that is, of angels.

"For this end it is that we are begirt and surrounded by so many coverings and tunics, by means of which communication is maintained."

You know that the objects by which we are surrounded in this world do not live, do not exist, by themselves. They were created by the Lord, by means of spiritual substances, existing in the same form in the spiritual world; so that the part that is visible to our earthly eyes is only a small part of the thing itself. The spiritual substance may properly be called the soul of the corresponding natural object, which soul preserves the material form, and keeps it in existence here, so long as it can perform a use for human beings while they are living upon earth. This is true of the atmosphere as well as of all other things.

In a posthumous work concerning the Last Judgment,

given by the Lord, through Swedenborg, for the use of the New Church upon earth, but which has not yet been published in English, there is important teaching concerning the atmosphere of both worlds.

L. J. (Post.) 313.—“ But it is to be known that the atmospheres originating from the Sun of Heaven, which is the Lord, properly speaking, are not three, but they are six; three above the sun of the world, and three below the sun of the world.

“ The three below the sun of the world continually follow the three natural atmospheres, and cause that man in the natural world can think and feel.

“ For, the atmospheres originating from the sun of the world, have not life in themselves because they originate from a sun which is pure fire; whereas the atmospheres originating from the Sun of Heaven, which is the Lord, have life in themselves, because they originate from the Sun which is pure Love and Wisdom.

“ The atmospheres originating from the sun of the world, which is pure fire, cause those things which are in the Earth, and which are in the human body, to subsist, and to be held together in connection, and not to

be changed except according to the laws of natural order.

“Hence is the difference of things in the natural and spiritual worlds.”

The people of the Lord's New Church have instruction given them in the Heavenly Doctrines to enable them to think of spiritual things through, or by means of the things of the natural world. This is the right direction for our thoughts to take, and though at first we have to force ourselves to form the habit, little by little it will become delightful to us.

We cannot overrate the importance of acquiring this habit; for it leads our minds from natural objects to spiritual things, and if we follow these to their beginning, they will lead us up through the Heavens to the Lord Who is the Source of them all, and who preserves all things in an unbroken connection from Himself down to the very stones under our feet.

The habit of continually thinking of the spiritual or real side of material objects will also help us to avoid setting too much value upon the things of this world, as we are all very much inclined to do. It will soon enable us to judge between the two, and to see how infinitely more precious the things of the spiritual world really are.

While studying the subject of the skin, it would be profitable to think of the things in this world, and in the other as well, that perform the same uses as those of the skin. There are many things of this character; even

individuals, and whole classes of persons in this world, may have one or more of these uses to perform for the community as the business of their lives; and whole Societies in the other life do the work of the skin in the Grand Man, as will be seen further on, from extracts from the Doctrines. It is a similarity of use that unites and connects the most unlike things.

In reasoning concerning the cuticle, Swedenborg shows that because of the uses it has to perform, it must be, just what it is.

He shows that it collects and completes the uses of the underlying layers; that it connects and sustains them, and forces them to perform their duties aright; also, that like a coat of mail, it protects them from whatever would injure them in the outside world; and lastly, that through its numberless pores it admits into the body a great variety of nourishment from the three atmospheres and permits impure and hurtful matters to pass out.

The above is an outline of what Swedenborg teaches in the following extract from the *Animal Kingdom*. This, with several extracts from the Heavenly Doctrines, closes the subject of the cuticle in this work, although, as was said of previous subjects, this is only the beginning of knowledge concerning it.

SWEDENBORG'S SUMMARY CONCERNING THE CUTICLE.

“The *cuticle* or *epidermis* is the most general of all the tunics of the body, covering its circumference and ulti-

mate limits from top to bottom, or from the crown of the head to the extremities of the fingers and toes, and only terminating in the apertures there to insinuate itself more deeply inwards; divided in the most distinct manner into little plates or scales applied one to the other, intermediate in character between membrane and horn, hence pliable and elastic; growing upon the subjacent reticulum, and by this means connected with the papillary substance or cutis.

“This thin, foliated tunic is diversified by furrows, ridges, and little lines, drawn and channeled transversely, obliquely, circularly, spirally, and in this manner is partitioned into diversiform areas, islands, and tuberosities, in the extremes particularly; and at the same time it is full of little foramina and imperceptible pores, coming up from the subjacent papillary and glandular congeries, whence it is perspirable throughout.

“Its color varies, according to temperaments, to the height of the sun at noon, and the climate; but nevertheless it is destitute of sensation, and without discernible fibres or vessels.

I.

“This squamous cuticle collects the particular utilities and functions of all the tunics and strata that lie under it, represents them in itself in a general manner, and completes them.

II.

“It maintains the connection of the parts spread under it; it sustains their changes of state, and impels them to perform their offices aright.

III.

“Like a coat of mail, constructed of wonderful scales, folds and joints, it protects and defends the sensitive, soft and agile tunics that it covers in, against injury from the surrounding air, against its heat, cold, perturbations, and various conditions not in agreement with the state of the body; and moreover against the rough and stinging particles of its vapors, and different fluids, and it takes upon itself in the first instance the changes to which these will give rise in the body, tempers them, and tends to break their force.

IV.

“It admits from the air and ether comparatively pure, simple elements which are in harmony with the natural state, and sends them down, as new aliment, into passages that lead to the blood. On the other hand, it sends out obsolete volumes of effluvia and sweats consisting of useless lymph, brine, and rancid fat, and disperses them into the contiguous air.”—*The Animal Kingdom*, n. 487, 488.

DIVINE TEACHING CONCERNING THE CUTICLE.

A. C. 5552.—Those things in man which have the greatest life correspond to those societies in the heavens which have the greatest life, and therefore the greatest happiness; as are those to which correspond man's external and internal sensories, and the things which

are of the understanding and the will; but the things in man which have less life correspond to such societies in heaven as are in less life; as are the cuticles which encompass the whole body, also the cartilages and bones which support and sustain everything in the body, and also the hairs, which spring from the cuticles.

A. C. 5553.—The societies to which the cuticles correspond are in the entrance to heaven; and to them is given a perception of the quality of the spirits who crowd to the first threshold, whom they either reject or admit; so that they may be called the entrances or thresholds of heaven. . . .

A. C. 5554.—There are very many societies which constitute the external integuments of the body, with a difference from the face to the soles of the feet, for everywhere there is a difference. . . .

A. C. 5557.—There are also spirits by whom others speak, and they scarce understand what they say; this they have confessed, but still they talk a great deal. Those become of this description, who in the life of the body have merely babbled, and have thought nothing at all of what they have said, and have loved to speak on all subjects. I have been told that they are in companies, and that some of

them have reference to the membranes which cover the viscera of the body, and some to the cuticles which are but slightly sensitive; for they are only passive powers, and do nothing from themselves, but from others.

A. C. 5559.—The conformation of the contextures in the cuticles has been shown me representatively. In the case of those with whom those extremes corresponded to the interiors, or with whom things material in these were obedient to things spiritual, the conformation was a beautiful contexture of spires wonderfully twined together, after the manner of fine lace, which can never be described; they were of an azure color. Afterward were represented forms still more continuous, more subtle, and more neatly fashioned: as such appear the cuticles of a regenerated man. But in the case of those who have been deceitful, these extremes appear like a conglutination of mere serpents.

A. C. 4325.—The parts which surround the body, as the muscles and skin, and also the organs of the senses, receive, for the most part, fibres from the cerebrum; hence man has sense, and hence motion according to his will.

A. C. 3540.—“Skins signify externals, because skins are the outermosts of an animal, in which its interiors are terminated, in like manner as the skin or the cuticles in man. This derives its significative from a representative in another life. There are those who relate to the province of the skin; they are such as are only in external good, and its truths. Because skins signified externals, it was commanded that the covering of the tent should be of the skins of red rams, and over these the skins of badgers. In like manner that Aaron and his sons, when the camp proceeded, should cover the ark of the covenant with the veil of a covering, and should put upon it a covering, the skin of a badger; and upon the table, and the things which were upon it, should spread a cloth of scarlet double-dyed, and should cover it with a covering, with a badger's skin. Likewise they should give the candlestick and all its vessels under a covering of badger's skin; and give all the vessels of the ministry under a cloth of blue, and should cover them with a covering, with a badger's skin. Inasmuch as the prophets represented teachers, and thence the doctrine of good and truth from the Word, and Elias the Word itself, and in like manner John, who therefore is called

the Elias that was to come, therefore that they might represent the Word, as it is in its external form—that is, in the letter—Elias was girded with a girdle of skin at his loins, and John had a garment of camel's hair, and a girdle of skin round his loins."

A. C. 8980.—"Those who are in the entrance to heaven communicate by the truth which is of faith with those who are in heaven, and by the delight conjoined to truth with those who are outside heaven; not otherwise than the skins or coats do which encompass the body, which by the sense of touch communicate with the world, and by a fibrous connection with the life of the soul in the body; hence it is that those who are in the entrance to heaven are called Cuticulars in the Grand Man. But such are of many genera and species, as are the cuticles or coats in the body; there being some which encompass the whole body, some the interiors in general, as the peritoneum, the pleura, and the pericardium, and some which encompass each of the viscera there in particular."

A. C. 10,036.—"The skin signifies truth in ultimates, and, in the opposite sense, the false therein. This is from correspondence, for those who have reference to the skin in the Grand Man, or in Heaven, are those who are in the truths

of faith, and not so much in corresponding good, who are in the threshold to heaven; hence by the skin in the abstract sense is signified truth in ultimates."

A. C. 8955, 8956.—"All on the planet Saturn, differently from ours, know that they shall live after death; wherefore also they make no account of their bodies, only so far as may be necessary for the life which, they say, is to endure and serve the Lord.

"They also care little about food and clothing; they feed on fruits and pulse of various kinds, which their earth produces; and they are slightly clad, for they are encompassed with a thick skin or tunic, which repels the cold."

D. P. 254.—"It has been provided by the Lord that those to whom the Gospel could not come, but a religion only, should also be able to have a place in that Divine Man—that is, in Heaven—by constituting those parts that are called skins, membranes, cartilages, and bones; and that they, like others, should be in heavenly joy. That before the Lord, Heaven is as one Man, and that therefore Heaven corresponds to all things and to every single thing in man; and also that there are those who answer to skins, membranes, cartilages and bones, may

be seen in the work concerning *Heaven and Hell*, published at London, in the year 1758, and in the *Arcana Cœlestia*."

SECOND OR MIDDLE SKIN.

THE skin lying immediately under the cuticle, and closely attached to it, is called the reticulum, or corpus reticulare Malpighii. In English, this means the reticulated or net-like body, or layer of Malpighi. It is said to be of Malpighi, because this celebrated anatomist either discovered it, or wrote something about it. But the following description of it was written by Heister :

"The corpus reticulare Malpighii . . . is an exceedingly fine, delicate membrane, perforated like a net with innumerable minute foramina. It lies immediately under the cuticle, and when the latter is brought away from the cutis, either by artificial means, or by accident, the reticulus adheres so very firmly to it, that a separation of the two becomes almost impossible, the reticulum seeming to be nothing more than the inner surface of the cuticle.

"In examining the reticulum, we find that it is most abundant in those places where the sensibility of the skin is most acute, as in the palms of the hands, the tips of the fingers, and the soles of the feet : it is also seen on the tongue, and indeed much more plainly and distinctly than elsewhere ; and the tongue, therefore, is the part in which its nature and constitution may be most successfully in-

vestigated; in other parts it is so thin as to be scarcely discernible.

“It is of a white color in the European; but deep black (although the cutis is perfectly white) in the Ethiopian; in the mulatto it is of a lighter shade.

“Hence the color of different races, and especially the blackness of the Ethiopian race is mainly dependent upon this membrane. Its uses are, to transmit through its little foramina the hairs, the cutaneous papillæ, and the excretory and absorbent ducts of the cutis; to maintain these parts in a certain and determinate arrangement, so as to prevent them from being easily moved away from their places: and it also appears to preserve the softness of the papillæ and their aptitude for touch.

“The cutis is a strong membrane, as thick as leather, of an elastic character, and investing the whole body. By its upper surface it is connected with the reticulum and the cuticle; by its lower surface, which is slightly pitted, with the fat, this latter connection being loose in some parts, but very close in others.

“Its thickness and consistence vary in different parts of the body; and also in different animals, as we know by the differences in leather. It has a number of furrows, incisures or lines, common to it with the cuticle.

“It exhibits certain large openings, as in the mouth, the nose, the ears, etc., in which parts, however, the cutis may more properly be said to be reflected than perforated; and also smaller openings, commonly called pores, which in their turn are subdivided into great and

small, and give egress to hairs, the transpiration, and the sweat; and ingress to mercury, the matter of contagions, etc.

“The larger pores are visible to the naked eye, in the nose and ears particularly; but the smaller pores are demonstrated by the microscope, and by the passage of mercury through leather.

“If we examine the structure or substance of the cutis, we shall find that it consists of a wonderful plaiting of very tough, single, tendinous fibres; of vast numbers of blood-vessels . . . of a multitude of nerves constituting papillæ, for the most part pyramidal in shape and reaching forth through the cuticle. These papillæ are most conspicuous (that is to say, after the removal of the cuticle) in the lips, the palms of the hands, especially about the tips of the fingers, and in the soles of the feet, and constitute the primary organ of touch. . . .

“The hairs are usually considered as belonging to the cutis, and are found in the greatest quantity on the head. When they grow on the body, they are called [in Latin] *pili*; when on the head, *capilli*.”—*Heister*, as quoted in Swedenborg’s *Animal Kingdom*, n. 471–473.

The following extract concerning the cutis, was written by Winslow, a Dutch anatomist:

“The inner surface of the body of the cutis is covered over with granules or small tubercles commonly called

cutaneous or miliary glands. . . These granules are partly imbedded in the substance of the cutis, in little fossulæ, which answer to the same number of little moulds or caps in the adipose substance. Their excretory ducts open on the surface of the skin, sometimes through the papillæ, sometimes on one side of them.

“The greater part of them are the sources of the sweat, and there are some of them that supply an unctuous and fatty matter, of different density, as in the hairy scalp, on the back, behind the ears, at the end of the nose, where, in certain subjects, this matter may be squeezed in the form of small worms. . . .

“By macerating the skin in water, or any other convenient liquid, these granules or corpuscles become very visible, especially in the skin at the end of the nose, and in that of the arm-pits.

“The late Mons. Duvernay clearly demonstrated to the Royal Academy of Sciences the structure of some of these cutaneous glands, which appeared like convolutions of small intestines, plentifully supplied with capillary vessels. The illustrious Morgagni, Professor of Padua, has given the name of *glandulæ sebaceæ* to those which furnish the unctuous matter above mentioned.

“Besides these granules, there are other small solid and hardish bodies, almost of an oval figure, contained in the substance of the skin. These are the roots or bulbs from which the hairs arise.

“The skin is perforated by an infinity of small bodies called pores, which are of two kinds. Some are more

or less visible, as the orifices of the lacteal ducts of the mammæ, the orifices of the excretory canals of the cutaneous glands, and the passages for the hairs. 'The other pores are imperceptible to the naked eye, but visible enough through a microscope. Their existence is also proved by the cutaneous transpiration, and by the penetration of the subtle parts of topical applications; which two circumstances may furnish legitimate reason for dividing these pores into arterial and venous.'—*Winslow*, as quoted in *Swedenborg's Animal Kingdom*, n. 475-478.

The following teaching in regard to the difference between the sweat and the perspiration of the body is an extract from Boerhaave, the most celebrated physician of his age, who was born in the year 1688 in Holland:

"THE EXCRETION OF THE SWEAT.—Underneath the cutis, upon the fat, all over the body, lie what are called the miliary glands; thickly set; furnished with an artery, vein and nerve, and giving forth an excretory vessel, which, rising through a foramen in the reticular substance, discharges the sweat by an open orifice under the epidermis; and is covered by a hollow, elevatable, roundish valve, placed beneath the cuticle, and capable both of transmitting and of confining the humor. This [vessel] is the principal organ for the excretion of the gross sweat, there being other vessels . . . for pouring out the thinner moisture.

"THE SANCTORIAN [OR INSENSIBLE] PERSPIRATION.—Besides the above, there are other exhalent vessels under the little scales of the epidermis, opening obliquely, and of such exceeding fineness that Leeuwenhoek reckons that 125,000 of them open in a space that may be covered by a single grain of sand. By these vessels a most subtle humor is constantly transpiring from every point of the body, which humor is named the Sanctorian perspiration, from its discoverer, Sanctorius, who has all the credit both of originating and completing this doctrine. The exhalation of this humor is carried on by the whole external epidermis, as well as by the cuticle of the mouth, the nares, the fauces, the larynx, the lungs, the œsophagus, the stomach, the intestines, the bladder, and the uterus; hence its quantity is greater than that of all the other excretions put together. . . . We may understand that when the sweat is increased and its vessels enlarged, the perspiration must necessarily be diminished and its vessels compressed; also that this perspirable matter is converted into sweat by violent exercise and excessive heat, but that it is very greatly assisted by moderate exercise and warmth, and that nothing is more conducive to its escape than gentle and long-continued friction." — *Boerhaave*, as quoted in Swedenborg's *Animal Kingdom*, n. 479.

As with all the other subjects treated of in that wonderful book, the *Animal Kingdom*, Swedenborg first quotes the most learned anatomists of his time, then

sums up their knowledge and gives his own conclusions from it. Some portions of his descriptions of the cutis and its uses are quoted here—such portions as you can understand; for the rest, you will have to wait till you are old enough to study the *Animal Kingdom*, where it is treated of at great length.

Swedenborg calls the cutis the papillary substance, because the papillæ, into which the nerves of feeling enter, originate in it; it is the “true organic substance of touch.”

The cutis is “thick, hard, erect, and acuminate [sharply pointed] in some parts; comparatively thin, soft, depressed, and flat in others; displaying various windings and gyrations, formed of furrows, ridges, and lines, straight, oblique, curved, waving, spiral, arranged in wonderful series, and likewise subdivided; marked out and tessellated into areas, squares, globes or circles, and divers other forms, regular and irregular.”—*Animal Kingdom*, n. 500.

We can see some of the “furrows, ridges, and lines” on the inner sides of the fingers.

The skin is never the same in any two organs or members of the body. How thick it is in the hands which we use so much, and how thin and delicate on the lips, whose use is to touch the food and thus warn the tongue of its quality.

“This papillary substance, thus arranged in series by means of the reticular membrane, or *reticulum Malpighii*, . . . according to the presence of pleasant or un-

pleasant touch, either puts forth and points itself, or draws back and smoothes itself, or inflames and hardens, or cools and softens, or writhes and curls. Moreover, in its furrows and sinuosities the cutis is perforated with innumerable tubules, emissary ducts, pores, and vessels, evaporating or else absorbing juices and vapors, thick or thin, or almost purely aqueous, or urinous, saline, or fatty."—*Animal Kingdom*, n. 500.

In addition to these tubes, ducts, and pores, there are soft bodies called glands lying on the fat under the cutis. These glands are formed by nervous fibres coming down into the skin from the brain.

The finest twigs of the arteries end in these glands, and the tiny branches of the veins begin in them. From these glands also tubes or pores pass up through the other skins to the air. Placed between these glands are numberless threads of nerves, with ducts, arteries, and veins running all over and around them, advancing to the papillæ, receding from them, and by their extremities sporting around them in a wonderful manner.

The uses of the cutis are as numerous as the parts of which it is composed. Swedenborg gathers them all into three general divisions, in each of which are very many particular uses. The three general divisions are as follows:

First.—"The cutis serves as a new source of fibres, and as an end and beginning of the vessels."

You have already learned that the blood-vessels, the

veins, and arteries, begin and end in the glands of the skin. In these same glands the nervous fibres end, and the other fibres begin which go to help form the viscera of the body.

Secondly.—The cutis sucks in nourishment for the blood through its numberless pores, and also through them throws out useless matter into the air.

Thirdly.—It is the organ of the sense of touch. The nerves of feeling come down from the brain into the papillæ in the skin, and through them the impression of everything that touches them is sent to the brain.

The three outside or external coverings of the body are called skins, while the inner or internal coverings are, generally, called membranes.

The skin is continuous, through the nose and mouth, with the membranes of the three great regions of the body—the brain, the thorax or chest, and the abdomen.

“The interior membranes of the body are continued membranes of the head.”—*S. D.* 1725.

The outermost membrane that surrounds the brain is also the inside lining of the skull. It is called the “dura mater” or “hard mother,” because of its tough, fibrous structure, and it is also called by Swedenborg, “the common mother of membranes.”—*The Brain*, n. 254.

The next one under it is remarkably delicate and transparent; it is therefore called the “arachnoid” or “spider-web” membrane.

The one under this, in immediate contact with the

brain, is so soft that it is called the "pia mater" or "soft mother;" it dips down into every fold, and around every lobe, and into every tiny fissure of the brain.

The dura mater and pia mater clothe every nerve that goes out into the body. They cover the optic nerve, and form the three coats of the eye, the sclerotic, the choroid, and the retina. The dura mater lines the orbit or cavity in which the eye is placed, and is also closely connected with the lining membrane of the middle ear, and with the mucous membrane of the nasal passages. So that the brain, by means of its own substance, or the nerves, and its own coverings around them, is present everywhere in the body.

Through the larynx, or breathing pipe, the external skin is continuous with the pleura—the membrane lining the thorax—and through the pharynx and œsophagus it is continuous with the peritoneum that lines the cavity of the abdomen.

Wherever found, within the body or without, membranes and skins have the same general uses of covering, protecting, keeping in place, and affording communication. Those within the body have also another use—of transmitting motion. The activity of the brain, the beating of the heart, the breathing of the lungs, are all conveyed; in wonderful order and harmony, from their respective centres to the remotest extremities of the body, through the coverings and linings, the walls, and tunics and tissues of the various organs. The entire body seems to be made up of skins and membranes that form tubes, and

sacs, and cavities for containing and conveying fluids of different kinds. With what respect we should look upon the human body, because it is so fearfully and wonderfully made; because it is the temple of the soul, and because the whole organic Grand Man relates to its purer and grosser membraneous things, and the LORD alone to its interior things!

A knowledge of its wonderful structure, of its uses, of its relation to the soul, to heaven and to the LORD, should lead us to carefully obey the laws of health by which it can be kept in the best possible condition.

The following pages contain some teaching about the sense of touch. It is from the Heavenly Doctrines, and is therefore the LORD's teaching to those who will be of His Church on the earth and afterwards in the Heavens:

C. L. 210.—THE SENSE PROPER TO CONJUGIAL LOVE IS THE SENSE OF TOUCH.—Every love has its own sense. The love of seeing, from the love of understanding, has the sense of sight, and its pleasantnesses are symmetries and beauties.

The love of hearing, from the love of hearkening and obeying, has the sense of hearing, and its pleasantnesses are harmonies.

The love of knowing the things that float about in the air, from the love of perceiving, has the sense of smelling, and its pleasantnesses are fragrances.

The love of self-nourishment, from the love of being imbued with goods, has the sense of taste, and its delights are delicacies.

The love of knowing objects, from the love of circumspection and self-protection, has the sense of touch, and its pleasantnesses are titillations.

The reason why the love of conjunction with a consort, from the love of uniting good and truth, has the sense of touch proper to it is that this sense is common to all the senses, and hence derives its support. That this love brings all the above-mentioned senses into communion with it, and appropriates their pleasantnesses, is well known. That the sense of touch is devoted to conjugal love and is proper to it, is evident from its sports, and from the exaltation of its subtleties to the highest degree of what is exquisite.

C. L. 396.—“That the communication and therefore the conjunctions of innocences is principally effected by the touch, is evident from the pleasantness of carrying infants in the arms, from embraces and kisses, especially in the case of mothers, who are delighted in laying their mouth and face upon their bosoms, and at the same time from the touch of the palms of their hands; in general from

the sucking of the breasts, and nursing; moreover, from stroking their naked body, and from the unwearied pains of swathing and cleansing them on their laps.

“That the communications of love and its delights between consorts are effected by the sense of touch, has been occasionally shown above. The reason why communications of the mind are also effected by the same sense is, because the hands are a man’s ultimates, and his firsts are together in the ultimates, whereby also all things of the body and all things of the mind are kept together in an inseparable connection. Hence it is that Jesus touched infants (*Matt.* xix, 13, 15; *Mark* x, 13-16), and that He healed the sick by the touch; and that those who touched Him were healed; hence also it is that inaugurations into the priesthood are at this day effected by the laying on of hands.

“From these considerations it is evident that the innocence of parents and the innocence of infants meet each other by the touch, especially of the hands, and thereby join themselves together as by kisses.”

In the numbers just quoted, we are taught the high and sacred use of the sense of touch; we are taught that it is the sense devoted to conjugal love, which love is known only in the LORD’S New Church. It is a most

holy and sacred love between consorts in this Church. Having learned from the Doctrines the high use of the sense of touch, you are better prepared to understand the importance of guarding it so as to avoid harming the love to which it is devoted. You have learned that the "innocence of parents and the innocence of children meet each other by the touch, especially of the hands."

Not only are good affections thus communicated, but evil ones as well. Diseases can also be communicated from one person to another by the touch. It is therefore of great importance to guard this sense with the utmost care.

D. L. W. 41.—Man has five external senses, called touch, taste, smell, hearing, and sight. The subject of touch is the skin by which man is enveloped, the very substance and form of the skin causing it to feel whatever is applied to it. The sense of touch is not in the things applied, but is in the substance and form of the skin, which are the subject; the sense itself is nothing but its affection from the things applied.

A. C. 1881.—Spirits are very indignant, yea, they are angry, when they are told that men do not believe that they see, and hear, and feel by the touch. They said that, still, men ought to know that without sense there is no life, and that the more exquisite the sense is, so much the more excellent is the life.

A. C. 3528.—That to feel is the inmost and the all of perception, is . . . because every sensitive is nothing else than an external perceptive, and the perceptive is nothing else than an internal sensitive. Moreover, every sensitive and every perceptive, which appears so various, refers itself to one common and universal sense, namely, the sense of touch ; the varieties, as the taste, the smell, the hearing, and the sight, which are external sensitives, are nothing but the genera thereof, arising from the internal sensitive, that is, from the perceptive.

A. C. 322.—Men should be on their guard against the false opinion that spirits are without a far more exquisite sensitive than in the life of the body, for I know the contrary from a thousand and a thousand experiences. Should they be unwilling to believe, in consequence of their supposition concerning the spirit, let them ascertain for themselves, when they come into the other life, where they will be compelled to believe by their own experience. They have not only sight, for they live in light ; and good spirits, angelic spirits, and angels, in such light that the midday light of this world can hardly be compared with it . . . they have hearing also, and that so exquisite that their hearing in the body cannot

be compared with it . . . they have a most exquisite touch, whence come the pains and torments in hell ; for all sensations have relation to the touch, of which they are merely diversities and varieties. . . . In a word, they have lost nothing by death, but they are like men, but more perfect, without bones and flesh and the imperfections from them. They acknowledge and perceive, that whilst they lived in the body, it was the spirit that felt, and although it appeared in the body, it was not of the body ; and therefore that, on the rejection of the body, sensations live much more exquisitely. Life consists in the sense, since without the sense there is no life ; and such as the sense is, such is the life, which may be known to every one.

PRODUCTS OF THE SKIN.

SKINS and their products, such as hair, fur, wool, feathers, bristles, horn, etc. (all of which are varieties of hair), are used in countless way for the needs, the comfort, the well-being and adornment, not only of civilized nations, but of half-civilized and savage peoples as well.

The latter are, perhaps, even more dependent upon skins than the nations possessing a greater variety of material, such as cotton, silk, hemp, etc. The tent under which a nomad sleeps, the bed upon which he lies, the

more or less of clothing he wears, the saddle upon his horse, are all of skin, or something growing out of a skin.

The work of obtaining and preparing skins and their products, and of shaping them into useful articles, gives employment to a vast number of persons. Hunters, trappers, shepherds, furriers, tanners, shoemakers, spinners, weavers, tailors, dressmakers, glovemakers, harnessmakers, bookbinders, and a host of others are all employed in some department of this work.

In ancient times, prepared skin, or parchment, was much more generally used to write upon than now. The most precious messages from the Lord, for the welfare—for the existence even—of mankind, were written on parchment.

The history of the gradual growth and development of very many of the uses of civilized life, called arts, trades, and manufactures, is involved in the history of the improved preparation and increased use of skins, and their products; because in civilized life people make very varied and multiplied use of the materials that, in a primitive way of living, have but few uses. Thus man, in a savage state, never dreamed of leather-bound books, and leather-covered furniture, of parchment for writing, of garments skillfully spun and woven, of feather beds and pillows, of mattresses stuffed with hair and wool. All these things, and numberless others, have been invented to meet the needs of a very different kind of life from that of the savage.

Quotations have been made, in this chapter, from the Heavenly Doctrines on the subject of Skins ; the following extracts, from the same source, are concerning hair, feathers, and wool, which are the three most important products of Skins.

It cannot be too often repeated that the things of this world should serve as means for thinking and meditating upon the things of the life to come. Every natural object about us is created through and by spiritual forces which give form and existence to the things we see here. These spiritual forces are the good and truth, the Divine Love and Wisdom of the Lord, the Creator. No matter how common an object may be, no matter how familiar we are with it, the thought that it is a form of use, made of material created by the Lord, should always be connected with it. Thus we may keep our thoughts so uplifted as to bring them more and more into the sphere of heavenly thought in which the angels dwell. The reading of the Word is the only way in which to form this habit. We are taught in the New Church that every object mentioned in the Word has a spiritual meaning, and this meaning is explained in the Heavenly Doctrines.

DIVINE TEACHING CONCERNING HAIR, FEATHERS, AND WOOL.

A. R. 47.—“And his head and hairs white as wool, as snow,” signifies the Divine Love of the Divine Wisdom in Firsts and in Ultimates.

. . . Since by the head is understood love, and also wisdom, in their firsts, it follows that by hair is understood love and wisdom in their ultimates; and because hairs are here spoken of the Son of Man, Who is the Lord as to the Word, by His hairs are signified the Divine Good which is of Love, and the Divine Truth which is of Wisdom, in the ultimates of the Word; and the ultimates of the Word are the things which are contained in the sense of its letter. That the Word in this sense is signified by the hairs of the Son of Man, or of the Lord, seems a paradox, but yet it is true; this may appear from the passages in the Word adduced in *The Doctrine of the New Jerusalem Concerning the Sacred Scripture*, n. 35-49; where it is also shown that the Nazirites in the Israelitish Church represented the Lord as to the Word in ultimates, which is the sense of the letter; for Nazirite, in the Hebrew tongue, signifies hair, or a head of hair; hence the strength of Sampson, who was a Nazirite from the womb, was in his hair; that in like manner Divine Truth, in the sense of the letter of the Word, is in its power, see in the above-mentioned *Doctrine Concerning the Sacred Scripture*, n. 37-49; therefore, also, the high-priest and his sons were strictly prohibited

to shave the head ; and, for the same reason, two and forty children were torn in pieces by two bears, because they called Elisha, Baldhead. Elisha, as well as Elijah, represented the Lord as to the Word ; bald signifies the Word without its ultimate, which, as was observed, is the sense of the letter ; and bears signify that sense of the Word separated from its internal sense ; they who separate them appear also in the spiritual world, like bears, but from a distance, whence it is evident why this was done to the children ; therefore also to induce baldness was the greatest disgrace and extreme grief. Wherefore, when the Israelitish nation had perverted all the sense of the letter of the Word, this lamentation was made over them : “ White were the Nazirites more than snow, whiter than milk ; darkened more than blackness is their form, they are not known in the streets ” (*Lam.* iv, 7, 8.) Also, “ Every head was made bald, and every shoulder was peeled ” (*Ezek.* xxix, 18). “ Upon all faces shame, and on all heads, baldness ” (*Ezek.* vii, 18.) . . . As the children of Israel dispersed by falses all the sense of the letter of the Word, therefore the prophet Ezekiel was commanded to represent this by that he should shave his

head with a razor, and burn with fire a third part of the hair, and smite a third part with a sword, and scatter a third part to the wind, and collect some in his skirts, which afterwards he should also cast into the fire (*Ezek.* v, 1-4 and fol.).

Therefore, also, it is said in *Micah*: "Baldness put thou on and poll thee for thy sons of thy delights, enlarge thy baldness as the eagle; for they migrate from thee" (i, 16). The sons of delights are the genuine truths of the Church from the Word. And because Nebuchadnezzar, king of Babel, represented the Babylonian falsification of the Word, and the destruction of all truth therein, therefore it came to pass that his hair grew like that of eagles (*Dan.* iv, 33). Since hairs signified that holy of the Word, therefore it is said of the Nazirites, That they should not shave the hair of their head, because it is the Naziriteship of God upon their head (*Numb.* vi, 1-21); and therefore it was ordained, that the high priest and his sons should not shave their heads, lest they should die, and lest the whole house of Israel should be angry (*Levit.* x, 6).

Now as by hairs is signified Divine Truth in its ultimates, which, in the Church, is the Word in the sense of the Letter, therefore,

also, the like is said of the Ancient of Days in *Daniel*: "I beheld while the thrones were cast down, and the Ancient of Days did sit, His garment like white snow, and the hair of His head like clean wool" (vii, 9); that the Ancient of Days is the Lord, appears manifestly in *Micah*: "Thou Bethlehem Ephratah, it is little that thou art among the thousands of Judah, out of thee shall He come forth unto Me who is to be Ruler in Israel, and Whose going forth is from of old, from the days of eternity" (liv, 2); and in *Isaiah*, where He is called the Father of Eternity (ix, 5).

From these passages, and many others, which are not adduced by reason of their abundance, it may appear, that by the head and hairs of the Son of Man, which were as wool, as snow, is understood the Divine Love and Wisdom, in firsts and in ultimates; and because by the Son of Man, the Lord as to the Word is understood, it follows, that This also is understood in firsts and in ultimates; otherwise to what purpose would the Lord here in the *Apocalypse*, and the Ancient of Days in *Daniel*, be described as to the hair?

That by hair, the sense of the letter of the Word is signified, appears manifestly from

those who are in the spiritual world; they who have held the sense of the letter of the Word in contempt, appear bald there; and on the contrary, they who have loved the sense of the letter of the Word, appear there with becoming hair.

It is said as wool, and as snow, because wool signifies good in ultimates, and snow, truth in ultimates; as also in *Isaiah* i, 18: For, wool is from sheep, by which is signified the good of charity, and snow is from waters, by which are signified the truths of faith.

A. C. 8764.—That wings in the internal sense are spiritual truths or the truths of faith, is manifest from Ezekiel,

“Thus saith the Lord Jehovih, A great eagle, great in wings, long in quills, full of feathers, which had needle-work, came upon Lebanon, and took a small branch of a cedar, and brought it into a land of trading; then he took of the seed of the land, and set it in the field of a sower, he took it to great waters, it sprouted and became a luxuriant vine. And there was another eagle, great in wings, and full of feathers, to which, behold! the vine applied its roots, and sent forth its branches into it, in a good field, at many waters; it was planted to make a branch, and to bear fruit, that it might be for a vine

of magnificence" (xvii, 1-8). This prophecy describes the establishment of the Spiritual Church by the LORD; the eagle there is faith; great in wings, and long in quills, are the truths of faith.

- A. C. 9331.—Isaiah li, 7, 8: "Fear ye not the reproach of man, and be not in consternation at their calumnies, because as a garment the worm shall devour them, and as wool the moth shall devour them." . . . The wool which the moth shall devour signifies inferior or exterior goods which are of the sensual of man, as appears from . . . the signification of a sheep from which the wool comes, that it is the good of charity.

ERRATA :

- P. 147. Middle of page insert title: "The Cutis."
- P. 154. Insert title: "Membranes."
- P. 156. Insert title: "The Sense of Touch."

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